

NBER WORKING PAPER SERIES
ON
HISTORICAL FACTORS IN LONG RUN GROWTH

LABOR MARKETS IN THE
TWENTIETH CENTURY

Claudia Goldin

Historical Paper No. 58

NATIONAL BUREAU OF ECONOMIC RESEARCH
1050 Massachusetts Avenue
Cambridge, MA 02138
June 1994

This chapter was written for the Cambridge Economic History of the United States, edited by Stanley Engerman and Robert Gallman. I thank Gerald Friedman, Lawrence Katz, Robert Margo, and Robert Whaples for helpful comments and suggestions on an earlier draft. Linda Tuch provided expert research assistance and I thank The Brookings Institution for the funding of her time. This paper is part of NBER's research program in the Historical Development of the American Economy. Any opinions expressed are those of the author and not those of the National Bureau of Economic Research.

LABOR MARKETS IN THE
TWENTIETH CENTURY

ABSTRACT

The study of the labor market across the past hundred years reveals enormous progress and also that history repeats itself and has come full circle in some ways. Progress has been made in the rewards of labor -- wages, benefits, and increased leisure through shorter hours, vacation time, sick leave, and earlier retirement. Labor has been granted added security on the job and more safety nets when unemployed, ill, and old. Progress in the labor market has interacted with societal changes. Women's increased participation in the paid labor force is the most significant. The virtual elimination of child and full-time juvenile labor is another.

Two of the most pressing economic issues of our day demonstrate that history repeats itself. Labor productivity has been lagging since the 1970s. It was equally sluggish at other junctures in American history, but the present has unique features. The current slowdown in the United States has been accompanied by a widening in the wage structure. Rising inequality is a far more serious problem because of the coincidence. The wage structure was as wide in 1940 as today but there is, to date, no hard evidence when it began its upward trend. The wage structure has, therefore, come full circle to what it was more than a half century ago. Union strength has also come full circle to that at the turn of this century.

Claudia Goldin
Department of Economics
Harvard University
Cambridge, MA 02138
and NBER

Outline

1.	Introduction	1-9
2.	Composition of the Labor Force and Its Sectoral Distribution	9-12
3.	Labor's Rewards	12-16
	Earnings and Productivity	12-15
	Benefits	15
	Hours	15-16
4.	Labor Force Participation: The Face of Labor	16-23
	Child Labor	17-18
	Older Americans	18-20
	Women in the Labor Force	20-23
5.	The Rise and Decline of Big Labor: Unionization in the Private and Public Sectors	23-28
6.	The Evolution of Modern Labor Markets	29-32
	Spot and Contractual Labor Markets	29-30
	What Caused the Evolution of Modern Labor Market Institutions	30-32
7.	Downtime: Unemployment, Layoffs, Sickness, and Seasonality	33-42
	Long-term Unemployment Trends	33-35
	Unemployment Duration and Incidence: 1900 and 1980	35-38
	Layoffs, Recalls, and Industrial Suspensions	38-40
	Sickness and Vacation Time	40-41
	Seasonality in the Past and Present	41-42
8.	Inequality	42-50
	The Wage Structure	42-46
	Black-White Differences in Earnings	46-48
	The Gender Gap in Wages	48-50
9.	Education and Human Capital	50-53
10.	Government and the Labor Market	53-57
11.	Summary	57-58

1. Introduction

With labor productivity and real wages lagging in the United States since the mid-1970s and inequality on the rise, many have questioned what has gone wrong. The vibrant American economy of the immediate post-World War II era appears sluggish. Labor productivity was equally sluggish during other periods, although none lasted as long as the current slowdown. The recent rise in inequality has returned the nation's wage structure to that experienced around 1940 rather than introducing inequality of unprecedented proportions.

Most relevant to placing the current labor market in a long-run perspective is that labor gained enormously during the past hundred years. Some of the gain was reaped through real hourly wage increases and enhanced employer-provided benefits. Some came in the form of decreased hours per week and decreased years of work over the lifetime. Still other gains accrued to labor in the form of greater security in the face of unemployment, old age, sickness, and job injury. Many of these gains were obtained when labor unions were weak. That is not to say that organized labor added little to labor's increased economic welfare over the past hundred years. Unionized labor earned between 5 and 20 percent more than nonunionized labor, of equal skill, during most of the period, and nonunionized labor in America may have benefited from the *voice* of unionized labor, particularly with regard to hours reductions. But there is no hard evidence that the American labor market was fundamentally transformed by unions in the same manner that European labor markets, with their institutional wage setting, employment security laws, mandated works councils, and centralization of collective bargaining, have been.

Across the past hundred years the face of the American labor force has been radically altered. Child labor was virtually eliminated, the labor force participation of the aged was sharply reduced, and women increased their participation. Whereas women were only 18 percent of the labor force in 1900 and most were either young or old, they are now almost half

the labor force and their age distribution resembles that of the male labor force. The rise of women's employment, in terms of its quantitative impact and by virtue of its social implications, could rightly be considered the most significant among the three major demographic changes considered here. All three changes have, by and large, come about because of secular changes in labor supply and not by dint of legislated constraints on labor supply. Legislation was often reinforcing, as in compulsory education, child labor laws, equal opportunity and affirmative action, and the Social Security Act. But long-term forces had already been set in motion before legislation and provided a far greater share of total change.

Finally, the labor market itself has been altered over the course of the past century. In 1910 27 percent of all male workers in the manufacturing sector reported their usual occupation as *laborer* and 30 percent in the transportation sector did (U.S. Department of Commerce 1914, p. 53). Yet others in both sectors were unskilled even though their occupational title was not that of *laborer*. Many of them were initially hired for brief stints. Substantial seasonality in employment, cyclical downturns, and general business failures resulted in job dismissals and layoffs. Workers today have no assurances of job security, but they do have considerably more protection and expectation of employment continuity than workers did a century ago. Although young workers today often choose to leave their jobs to seek better opportunities, they build more job tenure when older than did comparable workers a century ago.

It might be incorrect to characterize labor markets in the past as theoretically-conceived *spot* markets, since wages did not adjust instantaneously and markets did not clear continuously. But such labor markets had attributes far more characteristic of *spot* markets than do labor markets today. The growing skill content of work has transformed labor market institutions. Workers today have more formal schooling than in the past, and education interacts positively with on-the-job training. Workers, it is believed, accumulate more skills today that

are specific to particular firms than they did a century ago. With more specificity of skill and higher levels of skill, both workers and firms have a greater interest in long-term relationships.

Labor markets in the late twentieth century differ from those a century ago in several other dimensions. The greater centralization of hiring and firing authority has meant less discretion given to supervisors and foremen and more rules. Managers today use fewer sticks, such as the discharge of workers and the docking of pay, and more carrots, such as promotion and bonuses than they did a century ago. Although the rationalization of hiring, promoting, and firing evolved over time, these changes have been reinforced by a more regulated and litigious environment.

The evolution of modern labor market institutions has affected both individual well-being and the macroeconomy. Workers have more job security and more ability to make firm and industry-specific investments in job training. Thus modern labor market institutions put in place because of greater worker skill have also encouraged skill acquisition. But many question whether modern labor market institutions render the market less flexible, make wages more rigid, and result in more unemployment rather than less. Evidence on the variance of wages by industry for the period from 1860 to 1983 suggests that wages became more rigid sometime after World War II (Allen 1987). But other evidence points to wage rigidities in the manufacturing sector that were in place by the 1890s (Sundstrom 1990).

Unemployment levels and unemployment volatility have not increased substantially over time, but the distribution of unemployment has become more skewed.¹ A greater fraction of the unemployed today than in the past are out of work for long periods. Some of the difference owes to the greater seasonality of labor demand in the past and thus to the larger proportion of the unemployed who used to be out of work for brief spells. Some is probably due to the advent

of unemployment insurance enabling workers to search longer. The increase in long-term unemployment remains perplexing and disturbing.

The growth in labor's standard of living and well-being across the twentieth century was not always shared equally by skill, region, race, and sex. The wage structure probably widened until sometime in the second or third decades of this century, although the evidence is still inconclusive. The evidence is clear that the wage structure narrowed rapidly in the 1940s and then remained relatively stable from 1950 to the mid-1970s. The wage structure expanded significantly since then becoming as unequal by 1994 as it was 55 years ago. We know far less about the conjectured widening of the wage structure from the late-nineteenth century to the 1920s. The arrival of vast numbers of lesser-skilled immigrant men in the 1900 to 1914 period probably depressed the wages of unskilled men and may also have lowered the wages of the skilled in industries capable of adopting the assembly-line machinery of that era. There is also evidence that immigrants put downward pressure on the wages of craft workers, such as building tradesmen. The growth of big business with its demands for office and other white-collar workers would also have worked to widen skill differentials in the early twentieth century before high school enrollment soared in the 1920s.

Regional disparities in wages and the rural-urban differential diminished over time. Racial differences narrowed when the general wage structure was compressed in the 1940s and again in the mid-1960s to the 1970s. The ratio of male to female full-time earnings decreased during several periods in the twentieth century. But the periods differ from those of racial and general wage structure narrowing because sex differences are affected, in a complex manner, by changes in the participation of women in the labor force. To summarize, wage differences by region, sex, and race narrowed over the past century, but the wage structure for all Americans probably first widened, then narrowed substantially in the 1940s, before widening again in the

post-1975 period. Although the returns to education generally follow a path similar to that of the entire wage structure, there is evidence that the wage premium to ordinary white collar work declined in the early 1920s (Goldin and Katz 1995).

Wage differences by industry C termed the interindustry wage differential C have existed at least for the past fifty, and possibly one hundred, years. Particular industries pay higher wages across the skill hierarchy, given worker characteristics. Such differences apparently defy the notion that labor markets clear since, presumably, employers ought to be indifferent between hiring workers having identical observable characteristics. The existence of wages apparently above the market-clearing level has been offered in support of the notion that wages serve purposes other than that of clearing markets and that there is not one labor market but many noncompeting ones. A Good@ jobs, it is claimed, offer wages above the market-clearing level as an incentive for workers to reduce turnover, shirking, and malfeasance, and to increase effort. Because industries having more concentrated product markets are disproportionately those with higher wages, the interindustry wage differential could also indicate that some industry rents accrue to labor.

Government intervention in the labor market, both at the state and federal levels has emerged with increasing importance and significance across the past hundred years and has taken numerous forms. There has been legislation establishing social insurance (e.g., Unemployment Insurance, Social Security Act, and Workers= Compensation at the state level), protecting workers (e.g., Occupational Safety and Health Administration [OSHA], child labor laws), enabling and defining union activity (e.g., Wagner Act), restricting laborer=s wage and hours contracts (e.g., the minimum wage and overtime payment sections in the Fair Labor Standards Act), and limiting competition from abroad (e.g., 1924 and 1929 National Origins Acts restricting immigration). Much of this chapter will put forward the case that, with some

exceptions, labor's gains and labor market changes over the past century have, by and large, arisen from an unrestricted, laissez faire market.

Yet policy interventions seem far reaching. How, then, can one claim that the bulk of labor's gains and labor market evolutions would have occurred in the absence of legislation? Government intervention often reinforced existing trends, as in the decline of child labor, the narrowing of the wage structure, and the decrease in hours of work. Legislation often enabled the completion of markets that are more viable today than in the past, such as those for insurance and pensions. In several cases, legislation may have had unintended consequences, such as in the increase in industrial accidents, in certain industries, with the implementation of Workers= Compensation laws in the various states.

It should be emphasized that while the majority of labor's gains and changes in labor force participation would have occurred without legislation, legislation was enabling and often did make a difference. Black-white differences in incomes, for example, were narrowed by the 1964 Civil Rights Act and by affirmative action and federal contract compliance. Hours declines in the 1910s and 1920s occurred in states having maximum hours legislation affecting women only (Goldin 1988).

Oddly enough, given the many impressive pieces of legislation that have affected labor, two less obvious ones probably had the greatest impact on labor's overall gains. One is publicly-provided education particularly at the secondary-school level, and the other is immigration restriction. Publicly-funded schools cheapened the cost of education through scale economies, it redistributed income through taxation, and it encouraged the schooling of children from poor families by its free provision.² European immigration restriction legislation came first in the form of the literacy test in 1917 and later through quotas in 1921, 1924, and 1929. The quotas kept the masses at bay when decreased ocean transport and railroad fares would have enabled

international labor mobility on an even grander scale than during the height of immigration in the early 1900s. It was also a time when the goods produced by low-wage countries were poor substitutes for those produced in the United States, quite unlike circumstances today. In the absence of aggressive policy in these two areas, particularly education, the labor market would have evolved very differently.

The history of the past century seems to be coming full circle in various ways. Unionization in the private sector has returned to the level achieved immediately before the Wagner Act. Net immigration as a percentage of net population growth is at historic levels and exceeds that at the turn of the century. The wage structure has stretched significantly and may be as wide as at its peak, sometime in the 1920s or 1930s. Inequality, it should be noted, has also widened in many other OECD countries but the increase in America far exceeds that elsewhere. American business currently claims that U.S. high schools produce workers with inadequate basic skills for a high-tech work place. Their arguments echo those made in the early 1900s just before the United States expanded its educational system at the secondary level and embraced educational tracking but not a multi-tiered system with industrial training, as existed in Germany. Finally, the rate of labor productivity advance and wage growth for low-wage workers during the past 15 years looks more like that achieved sometime during 1900 to 1920 than in the three decades following World War II.

Many claim that the ills of the American economy in the 1990s are legacies of the period when we first rose to world industrial supremacy. We achieved leadership around 1910 and maintained it, in part, through our pioneering techniques using large scale, mass production, and the assembly line. Through an intricate division of labor, lesser-skilled labor was substituted for higher-skilled workers.³ Some assert, however, that these methods, often still practiced in the United States, are out of touch with the technologies of the 1990s, and that small scale, flexible

production, worker-management teams, and skilled labor make for success in today's work place (Marshall and Tucker 1992).

In sum, the past hundred years have witnessed enormous gains in wages and leisure and significant shifts in the composition of the labor force. Despite the rise (and subsequent decline) of private-sector unions and the increased interference and activity of government, the vast majority of the gains to workers and changes in the labor force can be attributed to fundamental advances in technology. Technological change has increased the skill component of the work place, decreased the relative demand for child labor, raised women's wages relative to men's, and decreased the price of home-produced goods, to mention just a few of the ways technology has altered the work place and the home. Government and unions shaped the labor force during the past century, but their roles have been less fundamental than in other OECD countries.⁴

The defense of these many characterizations begins with a description of the labor force C its composition, sectoral distribution, gains in the form of wages and hours, and labor force participation by age and sex. Unionization trends, and comparisons with the European case, are then discussed including why America never had a social democratic party, that is why there is AAmerican exceptionalism.@ The organization of the labor market and the possible shift from a Aspot@ to a contractual labor market is discussed, and changes in unemployment across the past century are assessed. Long-term trends in the wage structure and inequality in general are the next topic. Finally, the role of government intervention is evaluated.

2. *Composition of the Labor Force and Its Sectoral Distribution*

The labor force today is defined as all individuals (above some age) working for pay and, if unemployed, those seeking work during the survey week of the Current Population Survey (a related definition exists for the self-employed).⁵ The modern definition of the labor force took form with the 1940 federal population census. Before 1940 the population census asked for one's usual occupation, not whether one was employed during a specific time period. Thus, prior to 1940 the labor force is defined as all individuals who reported an occupation on the federal population census. These individuals were considered gainfully employed, and thus the labor force construct before 1940 is termed gainful employment.

The labor force concept before 1940 is not an unambiguous one. An individual who worked only a few weeks over the year might have reported an occupation, as might one who was long retired. A married woman who sewed for pay in her home every week of the year might not have reported an occupation, whereas an unmarried woman who worked in a factory 20 weeks during the year might have. There is probably no serious problem of enumeration for the adult male labor force prior to 1940. But there could be for women and youth, particularly in cities having industrial home work and large numbers of boarding houses, and in cotton, dairy, and fruit-growing farm areas.⁶

Several important trends are obvious in Table 1, which summarizes changes in the demographic composition of the labor force over the past hundred years. Women gained on men in their proportion of the labor force, rising from 17 percent to 45 percent. In large measure the increase in the ratio was due to the expansion of the female labor force. But the relative increase of women compared with men was reinforced by a decline in the participation of men at older ages and, more recently, by declines for men in other portions of the age distribution. Second, the labor force was reduced at both the older and younger ages, with the rise of retirement and

the increase in secondary and higher education. Finally, with the end of open immigration at the close of World War I, the proportion of the labor force that was foreign born declined. In 1890 26 percent of the male non-farm labor force was foreign born. By 1940 the figure was 11 percent, and in 1980, even including the illegal immigrant population, it was only 7 percent (not in table).

The broad outlines of the maturing economy C the relative decline in agriculture and rise of the tertiary (service) sector C are apparent in Tables 2, 3, and 4, which give the industrial and occupational distributions of the labor force. Sectoral changes for employees on non-agricultural payrolls are given in Table 2. Manufacturing employment (including both production and non-production workers), as a fraction of non-agricultural employees, decreased by 50 percent during past century and is only 17 percent of the labor force today. Government increased by two times, rising from 7.2 percent to 16.7 percent. All services increased by one and one-half times, whereas the goods producing sector decreased by one-half.

Occupational distributions for the entire labor force and by sex for the non-farm labor force are given in Tables 3 and 4. White-collar employment rose thirteen-fold from 1900 to 1990 whereas employment in the nation as a whole increased by four times. Thus 17.6 percent of labor force participants were white-collar workers in 1900 but 57.1 percent were by 1990 (see Table 3). Because the manual and service-worker groups grew at about the national average from 1900 to 1980, the decline of the farm sector during that period was exactly offset by the rise of the white-collar sector. Important movements occurred within the manual and service group. Private household workers declined relative to the total, and at times declined absolutely. But service workers, excluding those in private households, increased more than eight times from 1900 to 1970, causing their share of the total to rise from 3.6 percent to 11.2 percent.⁷ Among manual workers, the generic laborer category decreased from 12.5 percent to about 4

percent (from 25 percent to 7 percent among men) reflecting both the substitution of capital for labor's brawn and the greater skill content of even manual work.

Within the non-farm sector, white-collar jobs grew relative to blue-collar jobs, so that by 1990 more than half of all American workers were so employed, 46 percent for males and 71 percent for females (see Table 4). The largest increases were recorded in the clerical sector, and it was women, not men, whose gains in office work were the greatest. In 1900 just 5 percent of all female employees were office workers (adding together the clerical and sales categories), whereas in 1990 40 percent were. The relative growth of the managerial group, apparent in the data for the past twenty years, is virtually absent during the preceding seventy years.

Self-employment, even within the non-farm sector, decreased across the twentieth century (see Table 5). Because self-employment is positively related to age and because the age distribution of the population changed over time, Table 5 shows self-employment tabulated by age. In 1910 21.5 percent of all males in the non-farm labor force were self employed. The figure decreased to 14.9 percent by 1940, and by 1990 it was 12.5 percent. Self-employment also decreased within each of the age groups from 1910 to 1990.

Not only were Americans increasingly working for others, they were also employed in ever-larger employment groups to about the late 1960s. The median American production worker in 1899 was employed by a manufacturing enterprise that hired 22 other production workers (see Table 6). By 1967 the figure was more than double that. For all workers, production and nonproduction, the figure almost tripled during the same period, although it has, more recently, begun to decline. The proportion of all manufacturing workers who are production workers declined over time, with the growth of sales and office work forces, falling from 93 percent in 1899 to about 70 percent in 1982.

Thus the changing occupational distribution of male and female workers across the past century reflects the decline in agriculture, the rise of white-collar work, and the shift within manual employment away from laborers and within the service sector away from private-household employment. Among female workers the two most important changes are the rise of the clerical sector and the decline in private household workers. Because office workers increased from 5 percent of non-farm female workers to about 35 percent in 1970, and female private household workers fell from 35 percent to 4 percent, the shifts almost exactly offset each other.⁸

3. Labor's Rewards

Earnings and Productivity

Real annual wages increased during much of the past hundred years for most American workers. The series for all manufacturing workers is graphed in Figure 1.⁹ The increase from 1900 to 1929 was 1.43 percent average annually, whereas that from 1948 to 1973 was 2.35 percent average annually. After about 1973 the rate slowed to 0.46 percent average annually. The Great Depression and World War II punctuate the series, and one cannot be certain when the upturn in the growth rate in wages would have occurred in their absence. The golden age of manufacturing wage growth was the post-World War II era extending from about 1948 to 1973.

Much of the discussion concerning the current economic malaise is couched in terms of the slowdown in real non-farm labor productivity. Labor productivity is defined here as total product divided by all non-farm hours of work, and the (natural log) of this variable is graphed in Figure 2. The graph displays some of the underlying features of Figure 1 (real annual earnings in the manufacturing sector) — a quickening pace of productivity following World War II and a slowing of growth sometime around 1970. But the hourly labor productivity graph lacks

the enormous decrease during the 1930s in the annual earnings. It also does not display as sharp an increase in the post-World War II period. The reason is mainly found in hours of work per employed individual, which plummeted in the 1930s. Further, those who were laid off during the 1930s were less educated and probably less skilled in other ways than those who were retained. Thus productivity grew during the 1930s at a rate greater than that for the 1920s, although real annual earnings for employed workers in manufacturing did not grow in the 1930s.¹⁰

Non-farm labor productivity grew at about 2 percent average annually during the 1890 to 1930s period, increased to 2.34 percent in the 1945 to 1972 period, and plummeted to less than 1 percent annual growth since 1973. There were major ups and downs within these broad outlines. Non-farm labor productivity was about as sluggish in the 1907 to 1916 and mid-1920s to early 1930s periods as in the post-1970s (note that the slopes of the labor productivity index are about the same for these periods). Interestingly, at least two of these periods were also ones of decreased relative earnings of low-wage workers.

Lower-skilled groups were a major portion of the labor force early in this century. Among men, 25 percent of all non-farm workers were reported as **Alaborers@** in 1900 (see Table 4) and about 10 percent more were similarly unskilled but had other job titles.¹¹ It is instructive, therefore, to observe how the weekly wage rate changed for this group relative to that for all manufacturing workers. Figure 3 shows that the two lines edge upward from 1900 until 1907/08 when both decrease with the nation-wide economic recession. That for the lower skilled group then drifts downward, departing from that for all manufacturing workers which continues to rise. With the onset of World War I, however, the lower skilled series soars (but note the caution in Figure 3 regarding comparisons between the two series).

Contemporary commentators blamed the relative decline in the earnings of the lower skilled, after 1909, on the ever-increasing supply of immigrant labor. Recent econometric evidence, which shows that wages for certain occupations declined with increased immigration, lends some support to this view, although wages in various high-skilled building trades were also negatively affected (Goldin 1994). The impact of immigration on the wages of native-born workers for the period before the quotas is still not fully understood. The enhanced demand for unskilled labor during World War I and the relative flexibility of lower-skilled wages reduced the skill differential that had developed. The narrowing was reinforced by sharply curtailed immigration during World War I and by the ending of open immigration with the quotas in 1921.

Long-run series for other occupational groups, particularly white-collar workers, have also been assembled, often for periods briefer than the full century. Wage series for some professions (e.g., teachers, engineers, associate professors) give ambiguous trends relative to all workers. A recent wage series for ordinary white-collar workers (e.g., stenographers, bookkeepers, typists) gives an unambiguous result, however. That series plummets just after World War I, relative to that of production workers in manufacturing (Goldin and Katz 1995). The narrowing is apparent for males and females separately and for particular occupations. Even when the series is expanded to include managers, it declines rapidly. One possibility is that prior to the expansion of secondary schooling in the first decades of the twentieth century, ordinary white-collar workers were non-competing groups[@] and earned substantial premia (Douglas 1930). The expansion of secondary schooling, and of proprietary commercial schools, vastly increased the supply of potential ordinary white-collar workers. Their relative wages, therefore, fell. In the discussion on inequality a related series for white-collar workers, extending from the early 1920s to the 1950s, is presented.

Benefits

The wage or salary received by labor is but one part of labor's compensation for working. Benefits form another. Employers contribute to government social insurance programs, such as social security and unemployment insurance, and to private pensions, health insurance, and life insurance, among others. The fraction of total employee compensation accounted for by these supplements to wages and salaries has grown steadily and enormously over time. From 1929, the earliest date for which the National Income and Product Accounts contain such information, to the early 1980s, the fraction increased from just over 0.01 to about 0.17. That is, in 1980 17 percent of total compensation (direct payments and employer contributions) was accounted for by employer contributions. The fastest growth was in the 1970s (see Figure 4). Although the graph jumps around a bit before 1950, there is no apparent deviation from trend during World War II, as is often claimed.

Hours

The previous discussion of labor's rewards concerned compensation in the forms of earnings and benefits. But hours of work per week decreased substantially during the first few decades of this century. Further, paid vacation and sick leave emerged thereby reducing the number of weeks worked per year given labor's compensation package. Labor's gains, therefore, were in the forms of increased real earnings, enhanced benefits, and more leisure time. Figure 5 presents several time series on hours of work. The series reach far back to the early nineteenth century to provide continuity and to emphasize the remarkable decline in hours of work in the 1900 to 1933 period.

Hours of work in manufacturing were about 70 in 1830 and declined to 60 by 1860, remaining at that level until the mid-1890s. The decrease after 1900 is nothing short of spectacular. Ten hours, or one full day of work, were eliminated from the average work week during 1900 to 1920. Part of the decline was due to a reduction in hours per day. But a large

fraction was because the work week had been reduced from six to five and a half or even five days. The forty-hour work week of the post-World War II era was put in place during the Great Depression. It is likely that had it not been for the job-stretching hours declines during the 1930s, the decrease would have been more gradual. Because the post-1940 Owen series of Figure 5 is for non-student males, the rise of women's participation and the increase in college attendance do not directly affect the trend in hours worked. Although the Owen series levels off after World War II, labor force participation rates of males have continued to decrease and paid vacations and sick leave have expanded. Hours of work per week may have remained constant, but weeks worked over the year and years worked over one's lifetime have continued to decrease.

4. Labor Force Participation: The Face of Labor

The labor force was younger in 1900 than it was nearly a century later in 1990, yet it also included a greater fraction of older Americans than in 1990. It also contained a greater percentage who were foreign born and disproportionately more males than in 1990. Some of these changed features reflect the composition of the population, which was younger and more foreign born. Some, however, reveal the labor supply decisions of a poorer population, with less old-age security, fewer years of schooling, and higher fertility than today.

The median age of the population older than 14 years was about 30 in 1900 compared with 40 in 1990. But even had the age structure of the population remained the same across the century, labor force participation rates by age for the male and female populations would have made the labor force younger in 1900 than in 1990, even though older Americans also participated far more in 1900 than later. Teenagers and young adults had higher participation rates in 1900 than in 1990, and child labor was more extensive.¹²

Child Labor

Child labor **C** defined here as the employment of youths less than sixteen years old **C** was common in 1900 in particular industrial settings, such as textiles, and in agriculture.¹³ Although the industrial employment of children increased with the immigrant waves from southern, central, and eastern Europe in the post-1890s era, it had already declined considerably by 1880. In 1880 and in 1900, about 25 percent of all male children ten to fifteen years old had an occupation listed for them in the census (see Table 7). The percentage increased slightly between the two dates. But the proportion of working children engaged in agriculture fell and child labor was more extensive in farm regions than in non-farm areas. Child labor, therefore, must have increased between 1880 and 1900 in certain industries, possibly those that employed recent immigrants. It was the existence of such child labor that incited progressive reformers to call for a federal child labor law.

The high school was just beginning to emerge across the country in 1900 and in its absence teenagers either worked for pay, engaged in household production, or enjoyed leisure. Young women in 1900, even in the nation's large cities, often reported that they, like their mothers, were *at home*.[@] Rather than being members of the leisure class, they were apprentices in their future trade **C** housework. Young men in 1900, however, generally began work at 15 years old. Because most married women did not work for pay in 1900, the vast majority of working women were young adults. Women were 18 percent of the labor force in 1900 (see Table 1) and were an added factor in the youthfulness of the work force at the time.

As the high school expanded, the age at which paid employment commenced rose. Outside the South, high school graduation became the norm for the 18-year old American by the mid-1930s. Compulsory schooling laws existed in virtually every state by the early 1900s, and these laws gained more force in the early twentieth century when minimum ages were increased,

mandated yearly attendance was lengthened, and enforcement was strengthened. Whether compulsory schooling laws served to increase the educational attainment of American youth and decreased labor force participation is still an open question, but mounting evidence suggests that they were not. Laws in many states were passed after large gains in enrollment and seem to have lagged rather than led the high school movement. Furthermore, practically no state had a compulsory schooling law that mandated attendance by those of high school age until the late 1920s. The increase in college attendance, especially after World War II, for both men and women, added to the increase in the age at which work began.

Older Americans

The participation of older Americans also underwent significant change, although there is controversy concerning trends prior to the 1930s. Several researchers (Costa 1993, 1998; Margo 1993a; Moen 1987a, 1987b; but see Ransom and Sutch 1986) have used federal population census data to show that retirement increased almost continuously from about 1880 to the present (see Figure 6). Although a discontinuity in the labor force participation of older men appears with the passage of the Social Security Act in 1935, a decline is apparent prior to 1935. In 1900 about 65 percent of men older than 64 years old reported an occupation. But by 1980 less than 25 percent were in the labor force under one definition and about 20 percent were using the census definition.¹⁴

Also of importance is that participation rates in 1900 for older men were 10 percentage points higher in rural than in urban areas. Thus it may appear that retirement was lower among farmers and others in rural areas (Long 1958). But the lower retirement rates for men living in rural areas may be misleading. Many who retired moved out of rural areas and off the farm, leaving those in rural areas with higher than average labor force participation rates (Costa 1993, 1998).

For the non-farm population, retirement may have been more gradual in the past than it is today. Not all employed older men continued to work in the jobs they had in middle age. Particularly when jobs required substantial brawn, many retired slowly, on-the-job, by switching to less intense occupations (Ransom and Sutch 1986).

The fact that the increase in male retirement preceded the passage of the Social Security Act means that long-run factors must have operated to reduce labor force participation of older men. And because the increase in retirement occurred within the urban population, as well as within the country as a whole, the increase could not have been due solely to a decrease in farm employment. In fact, farmers retired at a rate about equal to that of the non-farm population in 1910 (Costa 1993). The most likely reason for the rise in retirement was an increase in real income and thus savings for old age (Costa 1993, 1998).

Men in their early to middle years, say from age 25 to 55, participated in the labor force to a considerable degree, perhaps at the maximum that could be expected in a healthy population during most of our history. The past twenty years, however, has witnessed a decrease in the employment rate of men in their prime ages. Although the decrease is more extreme for the nonwhite population, it is apparent for the white population as well. From 1970 to 1990 the participation rate of men 45 to 64 decreased from 89 percent to 80 percent (see Table 1) and that for men 55 to 64 decreased from 83 percent to 68 percent.

Women in the Labor Force

All the shifts in labor force participation just enumerated served to decrease the aggregate labor force participation rate. Increased education diminished the paid labor of youth; increased retirement meant a decrease in the paid labor of older men; and more recently the participation of prime-aged males has even decreased somewhat. The one major countervailing trend in twentieth century labor force has been the increased participation of women. Their greater

participation across this century served to increase the aggregate labor force participation rate of 25 to 44 year olds by about 50 percent.¹⁵ Not all of the increase in female paid labor, to be sure, translated directly into an increase in national income. Some hours of female paid labor came at the expense of a decrease in home-produced goods, like bread and clothing, that were later produced in the market (Goldin 1986). But even if none of the increase in female workers augmented national income, the evolution of the female labor force would still have enormous social and political significance. Paid labor outside the home for adult women conferred special status and led, eventually, to a call for real equality.

In 1900 less than 5 percent of all white married women were paid workers outside their homes. A wide gulf existed between the labor force participation of men and women. But with each passing decade the gap narrowed. Figure 7 graphs participation rates of all women and men 25 to 44 years old. The participation rate of women 25 to 44 years old increased by about 10 percentage points every decade from 1940 to 1990, narrowing the large gulf that existed earlier in the century. The same increases occurred in the participation rate of married women, although their rates increased even more over the entire century.

During the 1920 to 1940 period the greatest increases were for young married women, as can be seen in Figure 8. But from 1940 to 1960 the participation rate of white married women 45 to 54 years old soared, rising from 10 percent to about 40 percent. Other age groups of married women also experienced increased participation during those twenty years, but at a much slower rate. The younger group, 25 to 34 years old, for example increased at about a third the amount of the 45 to 54 year olds. Many younger married women in the 1946 to 1960 period were temporary stay-at-home moms producing the baby boom.[@] Increases were greatest for their age group during the 1960s to 1970s. By 1980 almost every group of women was an active participant in the labor force. Women with infants provide the one exception, but in the 1980s

women with young children rapidly increased their participation in the labor force. By 1990 more than half of all women with children returned to the work force within one year of giving birth.

The data in Table 1 and Figures 7 and 8 accept the official statistics in the U.S. federal census of population on occupation. As noted previously, the labor force concept before 1940 was that of *gainful employment*.[@] In 1900 just 3 percent of all white, married women claimed to have had an occupation. Archival research has shown that a far greater percentage worked for pay or produced for the market sector either in their own homes, on the family farm, or in the family business. Still others labored in the market sector but worked intermittently or for a few hours a week and did not report their occupation to the census taker. Given the social stigma that existed against white, married women's working for pay, it is not surprising that the reported labor force participation rate of married women was extremely low when women's work was primarily in domestic service and manufacturing.

The historical record on women's work in the United States is now sufficiently complete that a participation rate including all paid employment and production for the market can be constructed. Rather than a participation rate of about 3 percent for all married, white women the adjusted figure is around 15 percent for c.1895. The adjustments add in some portion of boardinghouse keepers, unpaid family farm workers, and uncounted female workers in manufacturing (Goldin 1986). By 1940 when the procedures used by the census established the modern labor force construct, the participation rate of all married, white women was just 12.5 percent. It is possible, therefore, that the labor force participation of married women in the United States traced out a C-shape across economic development, similar to that found in many developing countries (Goldin 1995).

Because the rise of women's paid employment was a change of enormous consequence, the factors that propelled this movement bear further discussion. The expansion of high school education, particularly for young women, and the growth of the clerical and sales sectors in the 1920s were the first changes that attracted a large group of adult, married white women into the paid labor force. The increased education of women and the continued growing demand for female white-collar workers fueled the large expansion in participation after World War II. Rosie the Riveter® returned home after the war, but her counterparts in office work, teaching, nursing, and other white-collar employments remained in the labor force (Goldin 1991). Thus the increase in the real wages of women workers enticed them to leave the household. Decreased fertility (for the older cohorts, not the younger ones, in the 1950s and 1960s and for the younger cohorts in the post-1960s era) and the greater availability of market substitutes for home-produced goods were reinforcing elements. Not all decades had the same set of factors operating. In the pre-1940 period shifts to the supply of female labor account for most of the increase in participation. But in the 1940 to 1960 period, shifts in the demand for female labor accounted for almost all of the change. More recently supply shifts have increased in relative importance and now share equally with demand shifts for the continued rise in female labor force participation.¹⁶ Each of the periods has also witnessed different changes in the relative wage of female to male labor, a topic considered in the section on inequality.

5. The Rise and Decline of Big Labor: Unionization in the Private and Public Sectors

Until passage of the National Industrial Recovery Act (1933) and later with the Wagner Act (1935), also known as the National Labor Relations Act, unionized labor in the United States had an uncertain legal standing. The N.I.R.A. was a stop-gap measure that gave employees the right to organize and bargain collectively in return for permitting business to write their own

codes of fair competition. Although the N.I.R.A. increased union activity, not all industries and firms went along with the principles of the legislation. Real change in the law came in 1935 with the Wagner Act. The Wagner Act gave unions the right to organize, set up a procedure for workers to form a union, and established the rules governing the bargaining relationship between workers and management. The Wagner Act replaced the *law of the jungle* with *labor's bill of rights*, although some of these were altered with the passage of the Taft-Hartley Act in 1947. It is no wonder, then, that the time series in Figure 9 on union members as a proportion of all nonagricultural employees contains a sharp break with 1936 when the ratio doubles.¹⁷ The true flowering of the union movement in America, however, occurred just at the close of World War II. In the subsequent decade unionization nationwide reached about 30 to 35 percent of nonagricultural employment. Private sector unionization, however, began to decline as early as 1960 and has tumbled downward almost every year since. Its level today, as can be seen in Figure 9, is almost identical to that on the eve of the Wagner Act. Yet its recent decline is fundamentally related to its evolution in the preceding century.

Unions in the nineteenth century were primarily craft organizations, most having independent identities in their city or town. With increasing mobility of labor and the creation of national markets in goods and services in the nineteenth century, the local union was doomed.¹⁸ An item produced by nonunionized labor in Schenectady, for example, was a close substitute for a similar one produced by unionized labor in Buffalo. Further, the unionized machinist in Cincinnati might decide to migrate to Baltimore. National trade unions were formed in the nineteenth century to cope with these problems, and their culmination was the formation of the American Federation of Labor (AFL) in 1886.¹⁹ The industrial union, containing workers unified by work site rather than trade, had a slower start. The first such union was the United

Mine Workers formed in 1890. The movement culminated in the formation of the Congress of Industrial Organizations in 1935, which later merged with the AFL in 1955.

Until passage of the Wagner Act, American unions were thwarted by two outside forces: the law and the militia. The Sherman Antitrust Act, passed in 1890 ostensibly to decrease the role of monopoly elements in product markets, was used against unions, most notably against union boycotts in a Supreme Court decision known as the Danbury Hatters' case (1908). The United Hatters had staged a boycott in 1902 against a firm producing hats with nonunionized labor. To the Supreme Court such a boycott was in restraint of interstate commerce, and the hatters, found by the court to be individually liable, were fined a colossal amount.²⁰ There were other ways as well that the law was used against labor. Firms, in many states, required that workers sign agreements in advance of their hire binding them not to join a union. Several states outlawed these so-called "yellow dog" contracts, but such laws were deemed unconstitutional, remaining so until passage of the Norris-La Guardia Act in 1932.

The role of the militia against labor and trade unions can be traced to several strikes and incidents in the late nineteenth century (Dulles and Dubofsky 1993). One was the Haymarket Square riot in Chicago which began as a strike for the eight-hour day against McCormick Harvester. It began peacefully on May 1, 1886 but ended bloodily after police were called to the scene to assist strikebreakers and a bomb later exploded. Of more importance to the history of organized labor was the strike in 1892 against the Carnegie Steel Company at its Homestead, PA plant. Homestead involved the direct confrontation between one of the nation's strongest labor unions and one of the nation's largest firms. It ended only when the governor of Pennsylvania ordered the state militia to place Homestead under martial law.

The strike of workers at the Pullman Palace Car Company began in 1894 and spread nationwide, through a secondary boycott to railroads using Pullman cars. Railway workers

showed allegiance by supporting those at Pullman and the union movement appeared, for a brief moment, to have strength and leadership. The strike was quashed by President Cleveland's use of federal troops to move the mails and finally by injunction.

The reaction of the American government to labor organization and labor unrest has been contrasted with that of the French. Such study highlights how American law and the militia were able to crush the union movement, whereas the French military encouraged and furthered labor's right to unionize and strike. "American exceptionalism," by which is meant the absence in the United States of a labor or social democratic party, has been traced to these factors (Friedman 1988). But its foundations must be sought in more basic, fundamental, and very American features. Cheap and available land served to reduce social unrest and mitigated downward pressure on wages in industrial and urban areas. Abundant immigration provided an ever-available source of cheap, unskilled labor in the post-1890s era. Both factors, at different points in American history, reduced the demand for a national labor party and served to divide labor.

Under the union banner are both public and private sector unions. Public sector unions rose after the 1960s but have leveled off in membership since the 1980s. Private sector unions declined precipitously since the early 1970s. Because public sector unions actually rose slightly or remained constant during the post-1960s period, the decline in private sector unionization is even more extreme than the total union membership fraction graphed in Figure 9. Placed in a long-run context, as it is in Figure 9, the post-Wagner Act boom in union membership is the anomaly, not the recent decline in private-sector unionization.

One possible cause for the recent demise of private-sector unions extends the argument, given earlier, concerning why national unions arose in the nineteenth century. With increasing internationalization of product markets, America has had to compete globally, just as firms in the

United States had to compete nationally in the nineteenth century. To remain viable, local unions in the nineteenth century joined forces to create a national union. Possibly because there is no international union, the union movement in America and in other parts of the industrialized world, such as Great Britain, has been weakened.

The primary goal of unions in the twentieth century has been to better the rewards of labor: to increase the wage per unit time, to expand employer-provided benefits, to improve working conditions, and, often, to reduce scheduled hours of work. Most evaluations of the impact of unions have attempted to estimate the wage premium received by union members. Such estimates have ranged widely, but the general conclusion has been that, at the peak of its membership, unions in most industries increased wages by only 5 percent above those of non-union workers.²¹ In some sectors, however, such as mining and the building trades, the union wage effect may have been as high as 20 percent. The wage effect was larger overall in the 1920s when unions were a smaller percentage of total nonagricultural employment and it rose to the early 1930s (Lewis 1963, 1986).

Thus although the union movement was a critical factor in some industries, most of the gains labor achieved in the twentieth century occurred because of market forces, not because of the power of organized labor. I do not mean to claim that labor unions have not served a useful role in the American labor market or that they have not been a pivotal force in the economies of many European countries. The question for American economic historians is whether a private-sector union membership of 10 to 15 percent, or approximately its level in the early 1900s and today, rather than one of 35 percent, that achieved at its peak, would have altered the rewards labor has garnered in the twentieth century. The counterfactual is a difficult one, but I doubt it would have made much of a difference overall. I offer an amendment in the section on the distribution of labor's rewards. The wide wage structure in the United States makes it unique

among industrialized countries. Those countries with strong nation-wide unions have far more compressed wage structures and far more extensive social insurance.

Neither the rate of productivity growth nor the rate of decrease in hours was much affected by the degree of labor organization. Labor productivity and real wages did rise at a faster clip after World War II than before the Great Depression (see Figures 1 and 2), but there is no evidence that increased unionization was the cause. Further, labor productivity continued to increase after 1960 when unionization was on the decline. Hours decreases, furthermore, were almost all gained prior to the rise of big labor, even though shorter hours were organized labor's most constant demand in the nineteenth century.

To claim that organized labor has not been a potent force in our labor history does not mean that it could not have been. For supporting evidence we need only look at the many European countries, as well as Australia, New Zealand, and Israel, in which the labor movement is robust and powerful. There are nine countries in Europe for which union membership as a percentage of employment in 1991 exceeded that reached in the peak year in the United States, and there are several others in which union membership is low but in which union agreements cover a significant fraction of non-unionized labor (for example, France). All these countries have pension, sickness, and unemployment coverage, to mention but three aspects of the welfare state,[@] that far exceeds that in the United States (Freeman and Rogers 1992). The wage structure in these countries is also considerably more compressed than in the United States. Thus the correct counterfactual would be to ask what organized labor would have accomplished had it been a stronger political force and represented more than half of the employed, not what gains unionized labor has made in the United States from its trough to its peak.

6. The Evolution of Modern Labor Markets

Spot and Contractual Labor Markets

The labor market of an industrialized and developed nation, it is often thought, evolved from a spot market, eventually becoming characterized by longer-term commitments, of an explicit or implicit nature. The modern market of longer-term contracts, it is believed, arose in the United States sometime in the 1940s and 1950s and replaced a rather chaotic market in which workers often migrated among jobs across the seasons, the business cycle, and in general. The modern labor market, in contrast, is supposedly inhabited by workers with property rights in their jobs.²²

Put starkly, the argument is that the labor market in the nineteenth century was a spot market in which workers had considerable job insecurity, invested little in human capital, had trivial wage growth over their life cycles, were discarded as older workers, were subjected to considerable discretion by foremen and supervisors, and were disciplined by sticks, such as being fired or fined. In contrast, the labor market of the post-World War II era is characterized by greater job security, investment in human capital, internal labor markets, wage growth (but possibly not productivity growth) over the life cycle, firm-related benefits, protection for older workers, strict personnel rules, and discipline by carrots and other incentives.²³

By a spot market I mean one in which labor's wage is approximately equal to its marginal product, in which there is little, if any, human capital that is specific to the firm, and in which hiring costs are inconsequential. Virtually no labor market is a spot in the sense of being an auction market every day, the way the market for day labor in agriculture is thought to be. And even day labor in agriculture was often characterized by longer-term arrangements in the nineteenth century. Although it is difficult to pinpoint precisely what is meant by a spot market, it is easy to say what it is not. The payment of benefits and pensions, the creation of a wage structure that is upward sloping with tenure when marginal product is not, the existence of

internal labor markets, among others features, are clearly not those of a spot labor market. Rather, they are institutions associated with longer-term commitments between firms and workers.

Economic historians, labor economists, and labor historians have compiled considerable evidence about the transition from spot markets to more modern labor market institutions, but our knowledge about the characteristics just mentioned is still vastly incomplete. It seems clear that various aspects of the labor market changed considerably over the last hundred years. Employer-provided benefits, for example, now comprise a large fraction of workers' compensation packages C 17 percent according to Figure 4 C but were virtually absent before 1930. Rules, rather than supervisor discretion, now govern personnel decisions in most firms, although personnel departments were virtually unknown before 1910. Unions, as was just shown, became a powerful force in the labor market after the mid-1930s, although they have declined in the private sector since the late 1950s. But other seemingly related indicators may not have moved in the direction predicted by the somewhat simplistic depiction of the evolution of modern labor markets just offered.²⁴

What Caused the Evolution of Modern Labor Market Institutions

To make sense of the process by which the labor market has evolved, it is useful to consider the reasons why change occurred. There are several schools of thought on the issue. First is that changes in technology increased the returns to firm-specific human capital and made managers eager to retain trained workers. Related to the argument is that the increased size of firms (see Table 6) and their weightier bureaucracies led owners to seek ways to reduce the opportunistic behavior of foremen and supervisors (Edwards 1979). Rules, rather than discretion, were instituted, and personnel offices were instituted to enact and execute company,

rather than divisional, decisions. Institutions of this type circumvented the principal-agent problem inherent in the previous system.

An alternative thesis for the evolution of modern labor markets is that workers, at some point, gained considerable power and formed or threatened to form unions (Jacoby 1984, 1985). Firms, in turn, gave workers certain benefits as a defensive strategy. In the process, workers gained some of the rents that capitalists had previously reaped. Thus Henry Ford, according to this line of reasoning, gave his workers above-market wages in the form of the five-dollar day to deter unions.²⁵

Entire industries, today and in the past, pay workers higher than market wages across the board. One way to explain what is known as the interindustry wage differential is to appeal to rent-seeking on the part of workers. Alternatively, or in conjunction with this thesis, is that unions, or the threat of organizing, have served to bring about the transition to modern labor market institutions. A common factor in the argument why workers eventually gained power is that the close of immigration during and after World War I tightened the labor market.

The evidence on the interindustry wage differential is suggestive but inconclusive for the past. Stronger evidence can be marshaled for the more recent period. Controlling for various individual characteristics, certain industries have paid higher wages to workers across the skill spectrum. Further, those industries that paid higher wages have tended to remain the same across several decades (Krueger and Summers 1987). The evidence suggests that rents are shared by workers and capital and that there is persistence in these rents. But longer-run data are less revealing.

Stability in the wages of unskilled male workers by industry has been found for the period from the 1920s to the 1940s (Slichter 1950) and for that from the 1920s to the 1980s (Krueger and Summers 1987). Stability has also been found across industries for the annual

earnings of manufacturing workers in the 1899 to 1950 period (Cullen 1956). Yet, because even unskilled workers can be heterogeneous with regard to productivity, the implication of these findings for an interindustry wage differential and for the existence of efficiency wages can be questioned.²⁶

The Jungle (1906), Upton Sinclair's journalistic novel, exposed the unsafe work conditions and uncertain employment of unskilled labor in the early twentieth century. New hires in the meatpacking industry, for example, were chosen from among the long lines of men that formed outside the factory gates. But what determined why one worker was chosen over another, and why were factory wages apparently above market clearing given the throngs outside? Such situations have been interpreted as a disciplinary device and the wage has been termed an efficiency wage.²⁷ Workers know that if they are fired their only alternative would be a less remunerative position or unemployment. They therefore work harder and shirk less. But the chosen workers, Sinclair tells us, differed from the men who were left outside. They were more recent arrivals, in better physical (and mental) condition than those who had already worked in the meat-packing factories and were fired, laid off, or had taken ill. Unskilled labor was heterogeneous physically and in terms of motivation, thus differences in pay may not reveal the workings of an efficiency wage.²⁸

If the interindustry wage differential is a function of industry rents, the competitiveness of industries should correlate well with wages. Of importance to historical study is that an interindustry wage differential should have emerged around 1900, during the period of the rise of big business and the great merger movement. There is no evidence to date on this matter.

7. Downtime: Unemployment, Layoffs, Sickness, and Seasonality

Long-term Unemployment Trends

Annual unemployment statistics have been collected as part of the Current Population Survey ever since 1940, and estimates of unemployment exist for earlier years that use the decennial censuses since 1890 for benchmarks. The original series for 1890 to 1899 is due to Stanley Lebergott; that for 1900 to 1930 is also due to Lebergott but builds on different underlying data. The BLS unemployment data are generally used for the 1930s. Several competing time series now exist for much of the pre-1940 period.

The Lebergott pre-1930 series compared with the Current Population Survey data for the post-1940 period reveal that unemployment in the non-farm sector was lower after World War II than before the Great Depression. The comparison also showed that the annual volatility of unemployment decreased with time. On both counts the U.S. labor force would have much to be thankful for. But a revised series, due to Christina Romer, has altered the findings for both volatility and level. The Lebergott and Romer series are given in Figure 10 for the total labor force. Differences between the two series have not yet been fully resolved.²⁷

The Romer revisions were made to correct for the possible introduction of excessive volatility in the original Lebergott numbers. If the Romer revisions are correct, the volatility of unemployment after World War II falls by only a small amount in comparison with its level prior to the Great Depression. In the original Lebergott series, volatility fell by a substantial amount over the twentieth century. Note in Figure 10 that the Romer series, from 1890 to 1929, always has lower peaks and higher troughs than does the Lebergott series.

The differences in the two series stem from how the annual data were produced from the various benchmark estimates for unemployment in the pre-1930 data. According to Romer, increased volatility crept into the pre-Depression Lebergott data through several routes.²⁸

Unemployment in both series is derived as the difference between the labor force and employment, and the annual estimates for the labor force and employment are produced by extrapolating on the basis of other variables. The labor force in the Lebergott estimates was extrapolated on population. But in cyclical upturns the labor force expands and in cyclical downturns it contracts. Employment was extrapolated on the basis of output. But employment contracts less in downturns than does output and expands less in upturns than does output. In other words, labor is *Ahoarded* over the cycle and is less volatile than is output. Each of these effects would add volatility to the estimated unemployment series.

Because the Romer series has less volatility than does that due to Lebergott, it also has lower peaks. The revisions to the unemployment figures for the 1890s are substantial. Rather than rising to a peak of 18.4 percent in 1894, the revised data reach a peak of 12.3 percent. Similarly, unemployment in the recession following World War I is far lower using the revised figures. Rather than reaching 11.7 percent nationwide, the figure is 8.7 percent.

Both the Lebergott and the Romer series refer to the entire labor force. But unemployment among farmers (although not among farm laborers) was a fraction of the level in the economy without farmers, and farmers were 20 percent of the entire labor force in 1900. The adjusted estimate of unemployment in the non-farmer sector in 1894 would have been about 23 percent using the Lebergott data, or about as high as it was at its peak during the Great Depression. If the Romer series is used the 1890s figure is 15 percent in the non-farmer sector, still an impressively high figure.²⁹

The discrepancies between the Romer and Lebergott estimates involve only the pre-1930s estimates. The debate has not concerned the issue of unemployment during the Great Depression. A separate controversy has raged over the level of unemployment in the 1930s and concerns the treatment of individuals on federal relief programs.

For the twentieth century the issue of unemployment is synonymous with the Great Depression.³⁰ The BLS-Lebergott data indicate unemployment in 1933, during the depths of the Great Depression, was 25 percent of the total labor force. But estimates of unemployment for the 1930s hinge critically on whether a large group of workers supported by federal work relief programs are included in the unemployed population, as they generally are in the official BLS data. A revised set of estimates gives a somewhat different picture of unemployment during the Great Depression.³¹ Estimates excluding relief workers contain a peak unemployment rate of 23 percent in 1932 and one of 21 percent in 1933 (Darby 1976). Unemployment declined to 14.6 percent by 1940, according to official statistics, but to 9.5 percent if relief workers are excluded.

Unemployment Duration and Incidence: 1900 and 1980

Although the volatility of unemployment may not have changed across the twentieth century, many other aspects of unemployment, gleaned at the micro rather than the macro level, did change. The duration and incidence of unemployment spells was altered considerably from the late-nineteenth century to the present. Spell duration was briefer around 1900 than in the late 1970s, although the incidence of unemployment was higher. The difference in incidence results mainly from a change in the occupational distribution. Relatively more white-collar workers are in the labor force today than in 1900, and their unemployment incidence is low. The finding that incidence decreased over time is consistent with evidence showing that seasonality in the manufacturing, construction, and transportation sectors, among others, caused considerable unemployment around 1900 (see Goldin and Engerman 1993). But the difference in duration is not so easily explained by compositional factors. The longer duration of unemployment today may be due to the greater ability firms now have to tag certain individuals whose employment prospects get bleaker with every spell of unemployment. Alternatively or in conjunction, the

provision of unemployment insurance may encourage firms to lay off workers selectively and to recall them just before their benefits run out.³²

Data from various state surveys around the turn of this century and from the U.S. federal population census manuscripts for 1910 allow a detailed examination of the duration and incidence of unemployment that can be compared with data for the more recent period. Table 8 tabulates annual days lost for reason of *no work* among men less than 65 years old who were not self-employed and were working in the manufacturing sector (some samples contain workers in transportation and construction). Four state BLS surveys are used here -- those from California (1892), Kansas (1884 to 1887), Maine (1890), and Michigan (1889). Estimates are also given in Table 8 for the number of days unemployed conditional on experiencing some unemployment and the total number of days in the work year, given by the implicit number of days worked plus the number lost to all causes.

The percentage of manufacturing workers who experienced some unemployment during the year was extremely high in three of the states. In Kansas and Michigan more than 60 percent of all manufacturing workers reported being unemployed during some period of the year. In Maine about 50 percent did, although only 32 percent reported so in California, about the same rate as in the 1910 federal population census for similar workers. The modal amount of time, conditional on experiencing some unemployment during the year, was about 2 to 3 months of *working time*, where a month of working time is taken to be 26 days.

Although the data for Kansas, Maine, and Michigan are comparable, they are far higher than are those for California and for the manufacturing sector in the United States in 1910. The differences do not appear due to industrial and occupational coverage in the state data, nor do they appear to be influenced by the particular dates of the surveys. Rather, they seem to reflect either highly variable unemployment by year and place, or a more accurate assessment of

unemployment in certain state surveys as opposed to the federal population census. At the current time, we do not know why these differences arise across these samples.³³

The data in tandem do suggest that workers in the past faced a much higher average probability of becoming unemployed than they do today but that they were reemployed faster. Kansas laborers, for example, faced a 6.5 percent probability of becoming unemployed in any given month. Cumulated over the year, the annual probability of entering unemployment was slightly greater than 50 percent. For a Kansas laborer, the mean waiting time between spells of unemployment was 15.4 months. Within 3.7 years, fully 95 percent of all currently employed Kansas laborers would have experienced unemployment. Virtually every one would have been laid off or terminated (or quit) at some point over a four year period. In contrast, an employed worker facing the 1977/79 entry hazard had a mean waiting time of approximately 9 years, and it would have taken 26 years for 95 percent of them to experience at least one unemployment spell (see Goldin and Margo 1991).

Although the probability of becoming unemployed was higher in the past than it is today, the probability of reemployment was also higher. An unemployed worker in the Maine survey, for example, faced a 34.4 percent probability of being reemployed within one month. Consequently the estimated mean length of an unemployment spell was very brief C just 2.8 months or about 70 days, far less than the mean spell in 1977/79 of just under half a year.

The correlates of unemployment also changed over the past century. Although certain observable individual characteristics were associated with unemployment spells in the late nineteenth century, industry and occupation overwhelmingly determined the incidence of unemployment over the year as well as the duration of unemployment conditional on experiencing any. The individual characteristics that mattered were those associated with geographic stability and, possibly, perceived need. For example, married men encountered

unemployment less often than did others, and having a larger family was associated with a lower probability of being unemployed. These findings raise the possibility that foremen, prior to the establishment of personnel departments, exercised power in deciding whom to lay off and may have set rules of fairness governing these decisions. Alternatively, married men and those with larger families may have been more willing to bribe supervisors directly or indirectly in terms of harder work.

Layoffs, Recalls, and Industrial Suspensions

It is clear that the vast majority of manufacturing workers in most of the states surveyed lost time during the year because they were laid off or were terminated. Layoff rates, in most of the surveys, appear considerably higher than in recent data and one might wonder if many of the workers were recalled by their employer. We know that today the vast majority of layoffs, for which the worker received unemployment insurance (UI), end in recall.³⁴

The only means of assessing recall in the state BLS data is to observe the unemployment experiences of workers with a year or more of tenure with the same firm and compare them with similar workers who had less than one-year tenure with their current firm. Workers employed by the same firm for at least a year, yet who claimed that they experienced unemployment during the past year, must have been laid off and subsequently recalled. But, among the group with more than one year of job experience, those who suffered unemployment during the year yet who were not working for their firm for one year, must not have been recalled.

Recall ranged from 71 percent to 91 percent, with a mean of about 80 percent, for the group experiencing some unemployment. Thus, of all employees who were laid off fully 80 percent were eventually recalled and rehired. These figures are not much different from those among workers today covered by UI whose spells ended either in recall or employment at another firm.³⁵ Recalled workers, in the late-nineteenth century, experienced 14 days less

unemployment than did those not recalled, holding constant various factors. Because the mean length of unemployment over the year was 56 days in the group being considered, those recalled lost 25 percent less time due to *no work* than those not recalled.

The finding of extensive recall among late-nineteenth century workers comes as a surprise. Many economic historians have commented on the high rates of unemployment experienced by particular subgroups in the population and at particular times in the late nineteenth century, such as during the depression of the 1890s. Extensive unemployment due to seasonality was viewed as costly, not just in terms of consumption smoothing, but more often in terms of compelling labor to be excessively and wastefully mobile. It was this excessive mobility that led many to view the pre-World War II labor market as chaotic and to applaud the new labor market institutions of the post-World War II era. If the recall numbers implicit in the state BLS data withstand further scrutiny, they suggest an entirely different interpretation. For the vast majority of workers and during most periods of time, the regularity inherent in seasonal layoffs may have kept labor around, to be hired by exactly the same firms when business picked up or when inputs became available again. Thus the role of UI in ensuring a steady flow of labor services by keeping labor fed and parked at the factory gates may be considerably less than we think.

Sickness and Vacation Time

Survey data from the turn of the century indicate how workers handled sickness and vacation leave-time prior to the institution of firm-provided benefits that often covered both. Somewhere between 20 and 33 percent of workers took some sick leave over the year and the time lost due to illness, among those with sick leave, was between 22 and 28 days. Thus anywhere from four to five working weeks were lost to sickness for individuals who claimed sick leave during the year, although the time could have been taken in single or multiple spells.

There are no comparable estimates for the current period because many workers receive personal days that can be taken as sick leave. Other information, however, affords comparisons.

In the 1970s about 3.5 percent of all workers did not report to their jobs on any day, excluding that due to paid vacations. The mean for white-collar workers was 2.8 percent and that for blue-collar workers was 6.3 percent. Among late-nineteenth century blue-collar workers, the figure was 3.6 percent for California, 5.5 percent for Kansas, and 5.9 percent for Maine. By necessity, these figures include time lost due to (unpaid) vacations (although that appears to have been quite small). Thus total time off as a fraction of the total work year was lower in the late nineteenth century than today, consistent with the notion that workers intertemporally substituted downtime across the year and that time off due to sickness increased when workers were compensated for days lost.³⁶ It should be emphasized that the findings do not imply that workers were more healthy in 1900. Their productivity was probably substantially reduced from having to go to work in poor health.

Economic historians have long wondered how nineteenth century manufacturing workers coped with eleven or twelve hour days, six days a week. The extremely high incidence of unemployment among manufacturing workers raises the question of intertemporal substitution. In most of the samples the elasticity of days lost due to other causes (i.e., other than sickness) with respect to that due to *Any work* was large. For California workers in manufacturing who experienced some days lost to *Any work*, for example, the elasticity was -0.5. That is, among workers experiencing unemployment in the previous year, a 10 percent increase in days lost to *Any work* was accompanied by a 5 percent reduction in days lost due to more voluntary factors, other than sickness.³⁷ Thus, in general, workers smoothed their downtime over the year and, not surprisingly, intertemporally substituted unemployment time for voluntary downtime.

Seasonality in the Past and Present

The high incidence yet relatively short duration of unemployment in 1900, in comparison with more recent data, reinforces the notion that seasonality had stronger employment effects in the distant past than today. The ratio of peak to trough monthly employment for manufacturing workers by industry was high in 1900. Further, the trough months vary more across industry today than in the past. Most workers who were laid off during 1900 must have experienced their unemployment in July/August and December/January, whereas there is far less synchronicity today. It should be noted, however, that seasonality in agriculturally-based industries (e.g., tobacco) is still strong today and that troughs in employment are still apparent during the summer months just prior to the harvest. Seasonality was progressively circumvented through various market forces, such as greater diversification in growing areas around the globe, lower transportation costs, and technological advances that cheapened storage. It may also be the case that firms in the past cared less about seasonally laying off workers, but that many firms now find it costlier to do so, in part due to the experience-rated elements of unemployment insurance.³⁸

8. Inequality

The Wage Structure

The expansion in the wage structure during the past fifteen to twenty years has attracted considerable attention. It began in the late 1970s, increased during the economic boom of 1982 to 1990, and continued in the subsequent economic recession. Various segments of the labor force have been left behind, and their loss in relative economic position has raised questions about the quality of high schools, the ability of American enterprise to absorb less-skilled labor, and the roles of international trade and immigration policy. Economists have explained the expansion in the wage structure by appealing to changes in technology, shifts in international comparative advantage, changes in the quality of educated workers, and the decline in private-sector unions. Above all, most of the literature has viewed the widening wage structure as something anomalous for the United States and in comparison with most other countries.³⁹

Yet the wage structure underwent an even more rapid change in the opposite direction some fifty years ago in the 1940s. I call this period the Great Compression, because in one decade the wage structure moved from one of vast inequality to one that displayed more equality than has been witnessed since. Income inequality, moreover, must have been affected to an even greater extent since the unemployment rate in 1939 was still high and was far greater than it was in 1949, (the years to which the 1940 and 1950 income data from the federal population census refer).

A convenient and much-used summary statistic of the wage structure C the ratio of the weekly wage at the 90th percentile to that at the 10th percentile -- is graphed in Figure 11 for 1940 to 1985. The figure clearly shows that the widening of the wage structure since 1970 has returned it, at least by the standards of the measure used, to that existing in 1940. In terms of the summary statistic in Figure 11, the wage structure in 1940 was as unequal as that in 1985, both

having a 90-10 ratio of 4.3. But in 1950 the same statistic registered a value of only 2.9. The wage structure widened a bit during the 1950s, but even as late as 1960 only 21 percent of the compression of the 1940s had been lost and the 1960s witnessed almost no change at all.⁴⁰ Other measures of the wage structure that rely on less extreme portions of the distribution (such as the ratio of the wage at the 75th percentile to that at the 25th), reveal similar trends across the past fifty years.

The compression of the wage structure in the 1940s was general and widespread. The narrowing, for white males, is evident by education, potential labor market experience, occupation, and region. The premium to college graduation over high school graduation, for example, declined by about 35 percentage points, and had been, in 1940, about 70 percent, for men less than 45 years old. Further, a narrowing can also be discerned within each of the educational, experience, occupational, and regional groupings. The narrowing did not just occur between the various groups but also within them. The estimation of earnings functions demonstrate the same findings. Not only was there a decrease in the *Aprice@* of skills from 1940 to 1950, the distribution of residuals was also narrowed considerably. It is clear that the 1940s were a decade of extraordinary change in the wage structure. Further, the wage structure put in place in the 1940s remained virtually intact during the 1950s and 1960s, quite unlike the experience directly following World War I.⁴¹

But the exceptional narrowing of the wage structure during the 1940s may have occurred because the wage structure was anomalous in 1939. Because unemployment during the 1930s was disproportionately experienced by the lesser skilled and lower educated, the wage structure in 1939 could have been substantially widened in comparison to what came before the depression. Further, the narrowing of the wage structure during the 1940s may have been part of a general secular trend toward greater equality in earnings that began long before 1940.⁴²

Both of these possibilities have been explored using two new data sets that yield information on salaried white-collar workers from the early 1920s to the mid-1950s. The results from the two series are reinforcing. After 1930, the white-collar premium in hourly earnings increased (far more so for weekly earnings), reaching a peak sometime around 1933/34 (see Figure 12).⁴³ A substantial and rapid narrowing then ensued (possibly due to the impact of the National Industrial Relations Act or to economic recovery), such that the skill differential by 1939 was similar to that in the late 1920s. One clear conclusion from these new data series on skill differentials is that 1939 was not anomalous (at least not with respect to the hourly wage ratios for higher to lower educated workers).

Almost all previous evidence on the wage structure for the period prior to 1940 has relied on data for skilled operatives, in manufacturing or the building trades, and unskilled workers (e.g., laborers, janitors). Numerous studies have found a decrease in the skill differential measured in this manner from 1900 to 1960, but with the bulk of decrease occurring during the 1940s. One problem with the literature is that the skill differential being measured has little to do with education because skilled workers are craft workers, not white-collar employees, and it is the increase in the supply of educated Americans that is the focus of attention of most work on the wage structure in the latter part of the twentieth century. The skill differential used in the previous literature, however, may be relevant for understanding the impact of changes in immigration, particularly its restriction in the early 1920s.⁴⁴ As noted previously, a recent study, which builds on the data underlying Figure 12, concludes that there was a substantial narrowing between the wages of ordinary white-collar workers and production workers in manufacturing sometime around World War I.

Because the wage data for 1939 do not appear anomalous, an explanation for the rapid and extreme narrowing of the wage structure in the 1940s must rely on the extraordinary changes

in the economy during the World War II era. The increased demand for less-skilled labor during the war must certainly have narrowed the wage structure, and the command economy that accompanied shifts in demand must have been reinforcing. Wages, after the Stabilization Act of 1942, were determined by the National War Labor Board (NWLB), and during its brief lifetime, the NWLB processed almost a half-million applications for wage increases. Its minuscule staff often relied on *Rules of thumb* by which increases were automatically approved for very low-wage jobs, to bring workers in a particular occupation up to par with others in the same occupation, and so on. All these rules could be expected to reduce inequality between and within occupations.

Industry evidence, compiled from a large number of Department of Labor studies, indicates that while the compression did occur to a large extent during the war and affected the 50-10 decile measure to a great degree, there was also considerable compression after the war and the 90-50 portion of the distribution was equally affected.⁴⁵ Thus, the war itself and the actions of the NWLB cannot be given all the credit for decreasing inequality in wages. Something else must have been going on.

These other factors include an increase in the demand for less skilled workers. If the 1980s created the rust belt, then surely the 1940s and 1950s established (or at least reinforced) the steel belt. An increase in the supply of educated workers before and following World War II, as will be detailed in the section on education below, was a supporting factor in the decrease in the return to schooling. But there must also have been other influences. The increased strength of unions beginning in the late 1940s is clearly a neglected factor, and, if the experience of European countries is any guide, the role of unions in the wage structure may have been important. There is also the minimum wage, first put in place in 1938 with the Fair Labor

Standards Act. The minimum wage was binding on a large percentage of workers from 1938 to the 1950s in many industries in the South, for example.⁴⁶

Black-White Differences in Earnings

The 1940s was also a decade of narrowing incomes between blacks and whites, as can be seen in Table 9. The ratio of black to white earnings in 1939 was 0.434 but was 0.552 in 1949. Part of the narrowing owes to the migration of blacks from the low-wage South to the higher-wage North. But another part was due to the general compression in the wage structure that lifted most workers in the lower tail of the wage distribution (Margo 1995). The earnings of blacks and whites continued to converge after the 1940s, a trend that has been broken only recently (O'Neill 1990).

The main long-run factor in the convergence of black and white earnings was the increase in the years, as well as in the relative quality, of education for blacks (Card and Krueger 1992). At the turn of this century, when the vast majority of blacks lived in the South, their years of education and expenditures per pupil were exceedingly low. Whatever educational advances followed Emancipation were slowed by the effective disenfranchisement of blacks in the post-1890 period (Margo 1990b). In 1940 black males 26 to 35 years old had only 60 percent the years of schooling that whites had. In 1950 they had 71 percent, and by 1980 they had 90 percent (Smith and Welch 1989, table 9).

The economic gains that blacks made relative to whites since 1940 were largest in two eras. The first was the decade of the 1940s, and the second was the period from about 1965 to 1975. All cohorts in Table 9 experienced an increase in the ratio of black to white earnings during the 1940s, whereas little occurred from 1950 to 1960. Because Table 9 is arrayed by census years, the change from 1965 to 1975 cannot be easily detected. But an increase sometime during 1960 to 1980 is apparent. The disjunction in the economic progress of African-

Americans suggests that episodic factors were also of importance in narrowing the earnings gap between whites and blacks (Donohue and Heckman 1991).

The general wage compression of the 1940s and the enormous migration of blacks to the North have already been mentioned as possible factors in that decade. The sharp reduction in the earnings gap between whites and blacks in the immediate post-1965 period occurred within the South as well as the North, and was, therefore, not a function of migration. Several careful studies have demonstrated that the Civil Rights Act of 1964 was instrumental in forcing or enabling firms to hire black workers in the South, particularly in textiles (Heckman and Paynor 1991).

Although black Americans still earn substantially less than do white Americans, the gap between their incomes narrowed considerably in the decades since 1940. By the mid-1970s a college-educated black man could expect to earn precisely what a college-educated white man could. Since then, however, some of the previous gains have been halted and many have been reversed. Among college educated men, for example, the ratio of black earnings to white earnings decreased by 13 percent from 1973 to 1989. Similar losses were experienced by those nationwide with less than a college education. But far greater reductions were felt by those with no years of college in the midwest. That ratio was reduced by 22 percent from 1973 to 1989 (Bound and Freeman 1992). We are still too close to the current period to understand why the gains of the past have been unraveling for African-Americans.

The Gender Gap in Wages

Wage gaps along several dimensions C between the skilled and the unskilled, the more educated and the less educated, and whites and blacks C widened during the 1980s. But wage differences between men and women have narrowed after being relatively constant from about 1955 to 1980. Another narrowing of the gap between male and female earnings occurred during

the first several decades of this century, as can be seen in Figure 13. In 1900 the ratio of the wage of a full-time female worker to that of a full-time male worker was 0.463. But by 1930 the ratio had increased to 0.556. Much of the increase was caused by the movement of women out of low-paid occupations, such as servant and manufacturing operative, and into the ranks of white-collar workers in offices and retail establishments. The increase in the relative pay of women to men in the early twentieth century rivals that in the previous century when women first entered the nascent manufacturing sector. During 1820 to 1850 the ratio of male to female wages rose from about 0.35 to 0.50 in manufacturing. Technological change that circumvented the need for strength in certain industrial activities was the critical factor in the increase in women's wages relative to men's, as well as in the employment of women. In the first part of this century women joined the burgeoning clerical sector (see Table 4) and were enabled to do so by the vast increases in secondary schooling at that time.

But the progress that women made relative to men in their full-time earnings appeared to come to a halt in the post-World War II period. Oddly enough this was the period of the greatest increase in wages in general and in general wage equality. Recall, as well, that it was also a period of enormous growth in the labor force participation of married and older women. A relationship exists between the wages of women and their increased participation that eluded many researchers who thought it paradoxical that participation rates of women increased while their relative wages stagnated.

The relationship between wages and participation derives from that between the accumulated job experience of all working women and changes in female labor force participation. Even though married women in 1950 spent, on average, only a fraction of their lifetimes in the labor force, those who entered the labor force at some point actually remained in

for a long time thereafter. That is, the labor force participation rate of married women was low, but those who were in the labor force were relatively continuous workers.

The connection between labor force participation changes and wages can be explained most easily by example. Assume 20 married women out of 100 participated in the labor force in 1950, but 40 out of 100 participated in 1970 (not far from the actual numbers). Under the assumption of work continuity, the 20 who were in the labor force in 1950 would have accumulated 20 additional years of work experience by 1970. But the 20 who entered the labor force from 1950 to 1970 would have accumulated fewer years. If one woman entered the labor force each year, then one would have one year of experience by 1970, another would have two years of experience, and so on until we got to the woman who entered in 1951 who would have nineteen years of experience. Thus the work experience of a representative woman in 1970 would be the average over all women in the labor force, or fifteen years. If, instead, the labor force participation rate had not increased at all, work experience, of the working female population in 1970, would have been 20 years **C** or five years more. Thus the large increase in participation put a drag on the accumulation of work experience by working women.

This example illustrates exactly what happened to the accumulated experience of working women in the 1950 to 1980 period. Because new entrants had little work experience, they depressed the accumulated experience of all working women. Because the wage is an average over all working individuals and because job experience is an important determinant of earnings, the increased participation of women put downward pressure on the wages of all women. Part of the stability of the ratio of female to male wages over this period, therefore, is due to the stability in the job experience of the average female worker.

But with each passing year the participation of women mounted, and the depressing impact of the new workers lessened. By the 1980s the job experience of the average working

woman began to increase. Further, women had made better investments in job skills prior to entering the work force and had more realistic expectations about their lifetime of work. For these, and other reasons, the ratio of female to male earnings began to climb and has increased 10 percentage points since 1981. In 1981 the ratio of mean hourly earnings of women to those of men was 0.637, but in 1991 it was 0.736. The ratio was even higher for young, educated women compared with similar men. For example, among never-married non-hispanic white 25 to 34 year olds, with more than four years of college, there was virtually parity in earnings between men and women, and among those with only a college degree the gender earnings ratio was 0.9 in 1991.⁴⁷

9. Education and Human Capital

The progress of labor across the twentieth century is closely associated with educational advances. The virtual elimination of child labor, the rise of the female labor force, the increase in the ratio of women's to men's earnings, the narrowing of the gap between black and white incomes, the compression of the wage structure in general, and the evolution of various modern labor market institutions can all be related to educational progress. Mean years of schooling by birth cohort increased rather continuously for males and females across this century. A somewhat better view of educational progress comes from examining the percentage completing high school and the proportion attending or graduating from college. When these indicators are examined, schooling advance appears less continuous and occurs in particular eras.

High school completion increased by almost four times from 1915 to 1940 rising from 13 percent of youths to almost 50 percent (see Figure 14). In the non-southern regions the graduation rate rose from a higher base and exceeded 50 percent by 1940 (Goldin 1998). Across the nation young people, especially girls, sharply increased their attendance in high schools

beginning with cohorts born around 1900 to 1920. Advances in college education began in the post-World War II period, in part fueled by generous grants provided through the GI Bill. College graduation (meaning four years or more of college) among young men rose from less than 15 percent of the 1920 birth cohort to more than 30 percent of the 1950 birth cohort, and that for women rose from about 7 percent to just below 30 percent between the same birth cohorts.⁴⁸

An oft-cited statistic demonstrating the importance of human capital to American economic growth comes from the familiar decomposition of the growth residual. From 1929 to 1982 national income per worker grew at a rate of 1.48 percent average annually. Conventional factors (labor hours, capital) can account for only 5 percent of this growth, leaving a residual of 95 percent. Of that residual, according to Edward Denison, 28 percent can be explained by increases in formal education (Denison 1985, p. 113).

Human capital accumulation and technological change were to the twentieth century what physical capital accumulation was to the nineteenth century. They were engines of growth. From 1929 to 1982 human capital formation accounted for almost 60 percent of all capital formation. The increased human capital stock advanced per capita growth in the twentieth century by more than any other single measurable factor. Because much of the residual must owe to advances in knowledge, the role of human capital formation in the economic growth of this century must be extremely large. According to standard estimates, which probably understate the growth of education over time, mean schooling of the male labor force increased from 7.72 years in 1920 to 10.86 years in 1970 or by 41 percent.⁴⁹

Less well-known is that advances in secondary schooling account for about 70 percent of the increase in total educational attainment from 1930 to 1970 of men 40 to 44 years old.⁵⁰

Increased high school attendance, not that of college nor elementary school, was responsible for the enormous increase in the human capital stock during much of this century.

The 1940 federal population census was the first to collect information on the highest grade completed and earnings, and thus it provides the earliest evidence on which to base a quantitative study of the returns to education. But the revolution in American education was well underway before 1940 with the expansion of high school enrollment and graduation from 1915 to 1935. How incomes and their distribution were affected by the increase in education across America is still unclear. Much has been written about the role schooling played in the evolution of the female labor force, which shifted rapidly during the early twentieth century into office and sales work, from domestic and manufacturing jobs. But less has been done on the male labor force. By 1939 the returns to college graduation relative high school graduation were exceedingly high and they were also substantial for high school graduation over primary school education (see Goldin and Margo 1992). The new white-collar wage series, discussed above, suggests that returns to secondary schooling narrowed around 1920. But because they remained high until the 1940s, despite a large increase in the relative supply of those with secondary schooling, the relative demand for educated workers must have shifted out rapidly in the 1920s and 1930s (Goldin and Katz 1995).

10. Government and the Labor Market

The government's involvement in the labor market through regulation and legislation increased substantially in the twentieth century. Because the subject is large and encroaches on that in other chapters, I will only detail legislation most relevant to the labor market, such as Workers' Compensation, maximum hours laws, immigration restriction and regulation, Social

Security, Unemployment Insurance, legislation affecting union activity, and anti-discrimination legislation.

Workers= Compensation (WC) legislation was the first social insurance passed in the United States. These laws, which were passed by the states and exist at the state level today, set down a more formal procedure for workers injured on the job to file claims against their employers. The passage of WC occurred swiftly: it passed 9 states in 1911 and 13 more adopted it by 1913. Forty-four states (including Alaska and Hawaii) passed WC legislation by 1920. Because the previous system, that of employer liability, entailed greater costs to bring suits, for example through the payment of lawyers= fees, it was thought that the WC system was efficiency enhancing[@] and left workers decidedly better off. Two other effects have recently been explored. One is that workers may have had their wages reduced after passage of WC if they were previously paid a compensating differential for more hazardous jobs and if the WC system taxed firms according to their claims. Workers still would have benefited from WC passage if the private insurance market did not offer them actuarially-fair insurance. Another effect is that workers may have taken greater risks on the job if they faced a higher probability of collecting damages when injured. Regulation of the labor market may not always achieve its intended goals, in this case making the work place safer.⁵¹

Also of concern during the Progressive era were the hours of labor and the employment of women and children. Maximum hours laws were passed at the state level beginning in the mid-nineteenth century, but no law constraining the hours of men was found to be constitutional. In the now famous case of *Muller vs. Oregon* (1908) the Supreme Court upheld a law passed by the state of Oregon restricting the hours of women to ten per day on the grounds that women required protection because they bore children. The Supreme Court decided that the right of the individual to contract freely was outweighed by the right of the unborn or, in the economist's

language, that an externality existed. Almost every state passed hours legislation restricting the hours of women and sometimes children. A relationship has been found between general hours declines during the 1910 to 1920 period and the legislation, although the precise causal relationship is unclear (Goldin 1988). It is possible that passage of the legislation provided a means to rally labor's support for lower hours in general. Child labor laws were also passed at the state level and went hand-in-hand with compulsory education laws. At the federal level a child labor law (the Owen-Keatings Act) was passed in 1916, but its sanction (a tax on the products of firms employing children under 14 years) was found unconstitutional two years later.

Legislation restricting European immigration, in the form of the literacy test, was first passed by Congress in 1897 but was vetoed by President Cleveland. The AFL under Samuel Gompers came out strongly in favor of the literacy test in 1897. Organized labor and many other groups believed that immigrants, particularly from the most depressed parts of Europe, seriously reduced the standard of living of America's working people. The test again passed Congress in 1913 but was vetoed by Taft, and it passed in 1915 but was vetoed by Wilson. In the midst of World War I, with xenophobia on the rise, Congress finally overrode Wilson's veto and general immigration restriction began. It was but a small step from the literacy test to the quotas, which were passed in 1921 and revised in 1924 and 1929.⁵² The final quota act, known as the National Origins Act of 1929, set down very strict limitations on immigration from the new sending regions of Europe (southern, central, and eastern Europe) by basing the quota on the historical make-up of the American population. Immigration from Asia was virtually barred, although that from Western Hemisphere countries remained unrestricted. It could be argued that the quotas, by restricting the flow of less-skilled immigrant labor, were the single most important piece of labor legislation in the twentieth century.

Immigration restriction was left virtually untouched until the Immigration Act of 1965 which retained some of the overall quantitative controls of the previous legislation, freed restrictions on country of origin, but included Western Hemisphere countries in the total pool. It also gave priority to close family members of American citizens and allowed for political refugees. Each of these changes increased the numbers emigrating from Central America and Asia, and added to those allowed beyond the global constraint. As noted previously, immigration, legal and illegal, has increased so greatly of late that the proportion of the annual net increment to total population accounted for by net immigration is at a historic, all-time high (around 38 percent). Fears that wages in various industries and occupations are being lowered by these Anew@ immigrants from Asia and Mexico and a longstanding tradition in American history of discriminating against Anew@ immigrant groups has led to a new call for drastic immigration restrictions.

A host of important labor legislation was passed during the 1930s. It is impossible to rank these landmark acts on the basis of their relative importance, and thus I list them in chronological order. The Social Security Act passed in 1935, a banner year for major legislation affecting labor. The data underlying Figure 6 suggest that passage of social security reduced the retirement rate of older men but it also shows that the labor force participation rate of older men had been decreasing for several decades prior to its passage. The Social Security Act also established unemployment insurance, administered at the state level, and the Wagner Act, already discussed in the section on unions, was passed in the same year. The Fair Labor Standards Act passed in 1938 and included a provision for the minimum wage and for overtime pay. In one brief period labor received social insurance, already a part of most European economies, the legal right to organize and bargain freely with management, and a guarantee of a fair wage for those employed.

The American unemployment insurance system differs in several important respects from that in European countries, and the differences are related to the historical material on unemployment discussed above. When unemployment insurance was debated and discussed prior to its passage in 1935, one often-expressed concern was how to reduce unemployment. Seasonality was viewed as a grave and avoidable problem, and it was hoped that the financing of unemployment insurance through taxing firms for their layoffs and dismissals would serve to reduce the hardship to labor. The U.S. system of unemployment insurance is the only one of its kind to experience-rate firms on the basis of their previous unemployment.⁵³

Recent labor legislation with substantial implications governs the hiring, promoting, and firing of minority groups, women, pregnant women, older workers, and those who take leave to care for sick relatives. The Civil Rights Act of 1964 covered both minorities and women, although Equal Employment Opportunity Commission, set up to receive and investigate charges of employment discrimination, was initially more vigilant in cases concerning minorities. There is ample evidence that blacks made substantial gains because of the Civil Rights Act and Federal Contract Compliance, but the case for women is more difficult to establish (Leonard 1986, 1989, 1990). The Age Discrimination and Employment Act, passed in 1967 and amended in 1978, prohibits discrimination in hiring, firing, conditions, and compensation against persons between 40 and 70 years old (with no upper limit in the Federal sector). The most recent legislation of this type is the Family and Medical Leave Act (1994) which guarantees, to most employees, the right to take limited unpaid leave to care for newborns, children, and other sick relatives.

11. Summary

The study of the labor market across the past hundred years reveals enormous progress. Progress has been made in the rewards of labor C wages, benefits, and increased leisure through

shorter hours, vacation time, sick leave, and earlier retirement. Labor has been granted added security on the job and more safety nets when unemployed, ill, and old. Most of these changes have occurred within the labor market, as revealed by lower turnover, greater pensions, and more generous leave policies. Some have been parts of governmental social insurance programs. Labor market progress has interacted with societal changes, causing them at some times and being caused by them at others. Women's increased participation in the paid labor force is the most significant. The virtual elimination of child and full-time juvenile labor is another. The greater economic role of women and the decline in juvenile labor were fostered by various technological changes and educational advances.

But the study has also revealed that some aspects of the labor market have not progressed as well and some have come full circle across the past century. Labor productivity has been lagging since the 1970s. It was equally sluggish at other junctures in American history, but the present has unique features. Ours is longer and is shared by most industrialized countries. The recent slowdown in the United States has been accompanied by a widening in the wage structure. No hard evidence causally links the slowdown to rising wage inequality but their impacts are easily related. Rising inequality is a far more serious problem because of the coincidence. A stretching in the wage structure is easier to manage in good times than in bad. Inequality rose in the past and it probably widened to the same extent, but the historical record is incomplete. The wage structure was as wide in 1940 as today but there is, to date, no hard evidence when it began its upward trend. The wage structure has, therefore, come full circle to what it was more than a half century ago. Union strength has also come full circle. Private sector unionization is now the same percentage of the non-farm labor force as it was before the Wagner Act and at the turn of this century.

The labor market seems a vastly different place than it was a century ago. Workers are more skilled, significantly more white-collared, and far less in the manufacturing and agricultural sectors. Labor, it is believed, uses more formal schooling skills, builds more human capital and greater value to the firm with time on the job. But there is conflicting evidence on job tenure across the century and a growing sense today that turnover has increased in the white-collar sector. A final issue, and one that has not been addressed here, is how the relationship between workers and their work changed over history. The industrial revolution, to some, created a group of alienated employees whose skills were diminished by the division of labor and machinery. Have the newer technologies created skilled employees who work in teams, are empowered by management, and find greater personal identity in their work?

ENDNOTES

1. There appears to be no apparent trend over the past 100 years in the level of unemployment, but the natural rate of unemployment does appear to have risen in the post-World War II period (see Figure 10).
2. Schooling could also have been denied to the children of middle-income families if the children could not make credible commitments to their parents to pay back the direct costs of schooling. Because foregone earnings, not direct costs, were the more important part of total costs of education, publicly-provided education did not guarantee that children would be sent to school even if the rate of return to such education was high.
3. That lesser-skilled labor was combined with raw materials to substitute for higher-skilled workers is a long-standing theme in American economic history having roots in Habakkuk (1962) and given empirical confirmation in James and Skinner (1985). See also Wright (1990) who emphasizes the rise of the United States to world industrial supremacy as depending on its comparative advantage in raw materials. I am emphasizing here the production of finished and intermediate products (e.g., agricultural implements, steel, automobiles, hides, meat, flour) and less raw materials (wheat, tobacco, cotton).
4. Freeman (1980) provides a fine summary of the changes in the American labor market from 1948 to 1980.
5. The Current Population Survey was altered in 1994 to reflect changes in women's economic role (e.g., the questioning is more gender neutral; those who are not employed are queried about job search more intensively). Although both the unemployment rate and the labor force participation rate are affected by the changed survey, the impact on the former is considerably greater than on the latter.
6. See Goldin (1990), who revises the female labor force for c.1895. On the labor force concept and its evolution see Durand (1948) and Long (1958), among others.
7. Because of changes in occupational definitions I will occasionally compare 1900 with 1970 or 1980, rather than with 1990.
8. Data for 1970 are used in this comparison because census occupational definitions change in the 1980s and comparisons are difficult among the clerical, sales, professional, and managerial categories. Note, for example, the apparent growth in the female sales labor force and decline in the female clerical labor force between 1980 and 1990.
9. The series for only production workers in the manufacturing sector is not very different.
10. Another difference between the series for real non-farm hourly labor productivity and the real wage series in this chapter is the deflator. The real hourly productivity series uses the GNP deflator whereas that for the real wage series uses the consumer price index for most of the period.

11. There were 3,482,000 non-farm, non-mine (male) laborers in 1900, (*Historical Statistics* 1975, series D 182-232). The 1900 census lists 48,544 male janitors and sextons, 276,958 male servants and waiters, 73,734 male hucksters and peddlers, 53,625 male porters and helpers, and 538,029 male draymen, hackmen, and teamsters. There is no separate listing for mine laborers (U.S. Department of Commerce and Labor, Bureau of the Census 1904). Although one might quibble with including all draymen, hackmen, and teamsters in the laborer category, there were many manufacturing employments requiring no skill that could not be included, particularly those in mining.

12. The decrease in the labor force participation of teenagers is not entirely apparent in Table 1 because some youths in the labor force are also enrolled in school. In 1990, for example, the labor force participation rate of all male 16 to 19 years olds was 55.7 percent. But it is only 32.2 percent if one excludes those enrolled in school and working part-time. The double counting of teens at school and at work arises more in the Current Population Survey than in the census data before 1940. In fact, it is more likely that the census data before 1940 undercount youths at work, rather than overcounting them.

13. It should be noted that young people who are in school can also be included in the labor force and that this is more frequent under the labor force concept than that of gainful employment. Therefore the proportion of 16 to 19 year old males in the labor force generally increased since 1940 (see Table 1) even though a greater fraction were also in school. See Goldin and Parsons (1989) on child labor in the 1890 to 1910 period and why it declined.

14. Moen (1987a, 1987b) estimates the gainful employment concept for the post-1940 period for consistency with the prior statistics. The main difference in the two concepts **C** gainful employment and the labor force **C** will be to bias upward the earlier data on labor force. Men who retired might still have declared an occupation, even though the enumerators of the census were instructed to record those who were retired as having no occupation. The Moen 65+ series is somewhat higher than the Census 65+ series (see Figure 6) because Moen tries to replicate the gainful employment concept throughout by using information on weeks employed.

15. The labor force participation rate of 25 to 44 year old males in 1900 was 94.7 percent and that for the same group in 1990 was 94.3 percent. But that for women in 1900 was 17.5 percent, whereas it was 74.9 percent in 1990 (see Table 1). If the populations of males and females were the same in this age group, the aggregate labor force participation rate in 1900 would have been 0.846 and that in 1990 would have been 0.561. The only change was the increase in women's participation, which served to increase the total by about one and one-half times or by 50 percent.

16. For a more complete discussion of the role of demand and supply shifts in explaining the increase in female labor force participation see Goldin (1990) chapter 5.

17. For a recent and novel alternative interpretation that gives far less weight to the laws, see Freeman (1998).

18. This is Ulman's (1966) thesis.

19. The AFL claims it was established in 1881 with the founding of the Federation of Trades and Labor Organizations. Most historians use the 1886 date.
20. The Clayton Antitrust Act, passed in 1914 clarified that Congress did not intend antitrust legislation to mean that unions were in restraint of trade. But later interpretations revealed that the act did not exempt unions from the antitrust laws, nor did it give unions relief from injunctions as Congress appeared to have intended.
21. A simple estimation of the union wage premium is hampered by the fact that union members tend to be more skilled than non-union members.
22. See Kerr (1954), on the 1950s, Nelson (1975), on the early 1900s, Edwards (1979), on the historical evolution, and Doeringer and Piore (1971), on the twentieth century.
23. See, for the earlier period, Goldin and Margo (1991), Carter and Sutch (1991), and Sundstrom (1990).
24. Carter (1988) and Carter and Savoca (1990) claim that jobs are not lengthier now than in the past. Jacoby and Sharma (1992), however, dispute their treatment of the subject and defend the conventional wisdom that job tenure has increased over the twentieth century.
25. See Raff (1988) for a discussion of this thesis and an alternative explanation for the five-dollar day.
26. Allen (1995) finds no evidence for an interindustry wage differential over long periods of time for nonproduction workers.
27. The Lebergott series can be found in Lebergott (1964) and, in part, in *Historical Statistics* (1975) series D 85-86. The Romer series is in Romer (1986a, 1986b), although see Weir (1992) for a critical review. See also Lebergott (1992) for a critique of Romer.
28. For a criticism of Romer's claim that the Lebergott numbers are excessively volatile for the 1900 to 1929 period see Weir (1992), who agrees that the 1890 to 1899 data are excessively volatile.
29. I assume here that unemployment among farmers in 1894 was equal to what it was in a non-recession year. It was 1.4 percent in 1900, which was a non-recession year (see Goldin and Engerman 1993). Farmers were 20 percent of the labor force in 1900.
30. See Margo's (1993b) excellent and balanced survey of the literature.
31. See Darby (1976) for a defense of excluding WPA workers, who are in the official BLS-Lebergott unemployment series, from the ranks of the unemployed, and Kesselman and Savin (1978), for a critique of Darby. Margo (1988) provides a reasoned view of the two extreme cases.
32. See Juhn, Murphy, and Topel (1991) on recent estimates, and Margo (1990a) for a comparison

of data for the 1970s with those for 1910. Keyssar (1986) contains a fine discussion of the evolution of the notion of unemployment in the United States.

33. It should be mentioned that the state BLS data, for all their virtues as quantitative windows on the past and on working-class people, are curious and puzzling documents. There is no precise record concerning how the samples of workers, families, and firms were drawn. They appear to have been collected in a haphazard manner, often compiled from relatively small numbers of individuals who mailed in their questionnaires. The questionnaires were generally distributed non-randomly by unions or in working-class neighborhoods. It is likely that many of the unemployed, such as transients and tramps, were not reached, although those who tramped would have been difficult to reach by even a well-designed sample. See Keyssar (1986) on tramping and the unemployed.

34. On recall as the route out of UI, see Katz (1986) and Katz and Meyer (1990).

35. There is a potential bias, however, in the state BLS data if unemployed workers exited the population from which the sample was drawn and other unemployed workers did not replace them. Even if the bias were present, however, it is not likely to alter the results significantly.

36. See Goldin and Margo (1991) for the historical data and Allen (1981) for the more recent numbers.

37. In Kansas the elasticity was -0.7, but in Maine it was small with a large standard error.

38. On seasonality see Goldin and Engerman (1993) and Kuznets (1933).

39. On the recent wage structure expansion see Katz and Murphy (1992).

40. The figure is 39 percent if only white men are considered (see Goldin and Margo 1992, table 1). The convergence between black and white incomes held in check some of the unraveling in the wage structure.

41. See Goldin and Margo (1992) on the *Great Compression* of the 1940s. Miller (1955, 1958, 1966) provides a contemporary portrait on the wage structure and the income distribution for 1940 to 1960. For the income distribution using IRS data from the 1920s to the 1940s see Kuznets (1953) and Goldsmith (1967).

42. This is part of the Kuznets thesis; see also Williamson and Lindert (1980).

43. The premium is inferred to be due to education because it is the ratio of the wage of white collar to blue collar (laborer or unskilled manufacturing) workers.

44. On the skill differential literature for the pre-1940 period, see, for example, Keat (1960), Ober (1948), and the summary in Williamson and Lindert (1980).

45. By 50-10 (and 90-50) is meant the ratio of the wage at the 50th (90th) percentile to that at the 10th (50th) percentile.

46. See Ehrenberg and Smith (1991), table 3.3 for the nominal value of the minimum wage and the ratio of the minimum wage to the average wage in manufacturing directly before and just following passage.

47. Numbers were calculated by the author from the March Current Population Survey data. See Goldin (1990) on the gender earnings gap and on the role of changing expectations regarding labor market experience. O'Neill and Polachek (1993) contains recent data and analyzes why the 1980s brought an increase in the ratio of female to male earnings. Blau and Kahn (1994) discuss the role of the wage structure. Rising inequality since the late 1970s has meant that women were swimming upstream. They would have gained one-third more relative to men had the wage structure not expanded.

48. The college graduation numbers come from Current Population Reports by using data on schooling completed for older cohorts. They could be upwardly biased for those who would have graduated in the pre-1960 period the same way that high school graduation data from the 1940 and 1950 censuses are for those who would have graduated before the early 1930s. See Goldin (1997) on college graduation rates, Goldin (1990) for women's schooling in general, and Smith and Welch (1989) for schooling differentials between blacks and whites. Goldin (1998) presents estimates for public and private graduation and secondary school enrollment rates in the 1910 to 1960 period using contemporaneous data from the Commissioner of Education and other sources. Such data are less afflicted by creep than those obtained from the 1940 and later censuses or the Current Population Reports.

49. The mean schooling figures are from Smith and Ward (1984).

50. The figure would be 85 percent if all of the increased education in the primary grades needed to advance students to the secondary grades was included. It would be reduced to 58 percent by subtracting the 0.46 years, on average, of education needed to advance those in the grades five through seven to eighth grade (see Goldin 1998, table 1).

51. See Fishback and Kantor (1995) for an analysis of the wage effects from passage of Workers' Compensation.

52. See Goldin (1994) for an analysis of why immigration restriction passed.

53. A standard and superb historical work on the subject is Nelson (1969). For various reasons the experience rating system is incomplete, and many sectors and firms that reach the maximum tax (e.g., autos, construction) have little incentive to reduce unemployment.

List of Figures and Tables

Figures

- Figure 1: Real Annual Earnings (1987 dollars) of Manufacturing-Sector Workers, 1900 to 1991
- Figure 2: Natural Log of Non-Farm Hourly Labor Productivity Index (1958 = 100), 1891 to 1988
- Figure 3: Real Annual Earnings (1987 dollars) in Manufacturing and for Lower-Skilled Workers, 1900 to 1924
- Figure 4: Fringe Benefits as a Fraction of Total Compensation, 1929 to 1988
- Figure 5: Weekly Hours of Work, 1830 to 1986
- Figure 6: Labor Force Participation Rates of Older Men, 1860 to 1980
- Figure 7: Labor Force Participation Rates of Men and Women, 25 to 44 Years: 1890 to 1990
- Figure 8: Labor Force Participation Rates for Two Age Groups of Married (White) Women, 1890 to 1990
- Figure 9: Union Membership as a Fraction of Nonagricultural Employment, 1890 to 1992
- Figure 10: The Aggregate Unemployment Rate, 1890 to 1990
- Figure 11: Wage Dispersion across the Past Half Century: The Ratio of the Weekly Wage at the Ninetieth and Tenth Percentiles, 1940 to 1985
- Figure 12: Wage Differentials for White Collar and Blue Collar Workers, 1922 to 1952
- Figure 13: Gender Differences in Earnings, 1820 to 1992
- Figure 14: Secondary Schools Enrollment and Graduation Rates: 1890 to 1975

Tables

- Table 1: Labor Force Participation Rates by Age and Sex, and the Fraction of Women and the Foreign Born in the Labor Force: 1890 to 1990
- Table 2: Industrial Distribution of Employees on Nonagricultural Payrolls, 1900 to 1990
- Table 3: Occupational Distribution of the Labor Force: 1900 to 1990
- Table 4: Occupational Distribution of the Non-Farm Labor Force, by Sex: 1900 to 1990
- Table 5: Self-Employed as a Percentage of Non-Farm (White) Males by Age: 1910, 1940, and 1990
- Table 6: Mean Number of Workers per Manufacturing Establishment and Fraction Production Workers: 1899 to 1982
- Table 7: Labor Force Participation Rates of 10 to 15 Year Olds and Fraction Working in Agriculture: 1880, 1900, and 1930
- Table 8: Distribution of Unemployment for Manufacturing Workers: by State, 1880s-1890s, and for the United States, 1910
- Table 9: Black Male Wages as a Percentage of White Male Wages by Labor Market Cohort

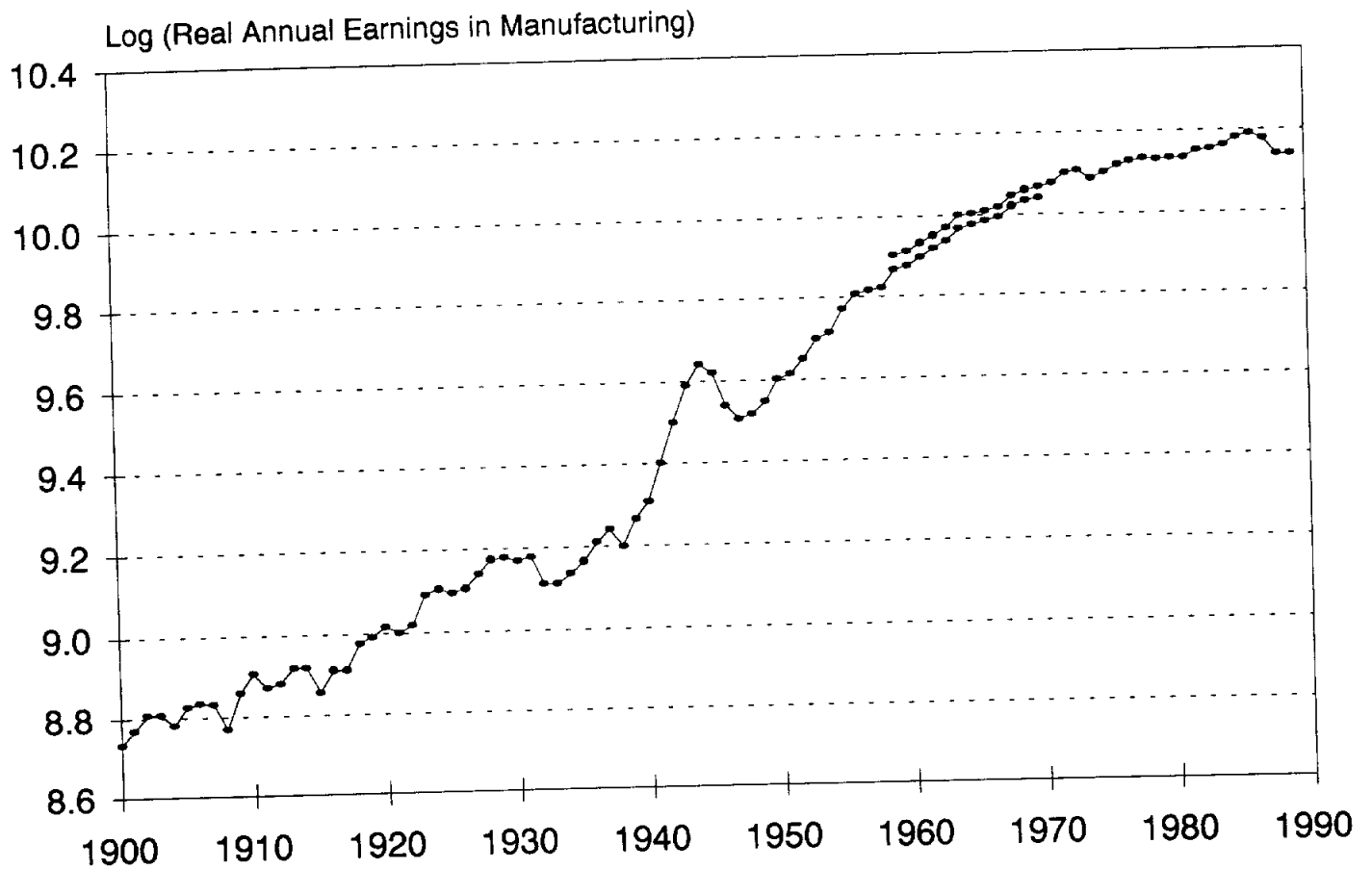


Figure 1: Log of Real Annual Earnings of Manufacturing-Sector Workers, 1900-1991

Sources and Notes:

Earnings 1900-70: Historical Statistics (1975), series D 740; earnings 1959-91: National Income and Product Accounts, table 6.6B-6.6C. Price deflator 1900-60: Historical Statistics (1975), series E 135, consumer price index (BLS); 1961-88: Economic Report of the President, implicit GNP deflator for all consumption. 1987 = 1.00 for the deflator. Manufacturing-sector workers includes production and non-production workers.

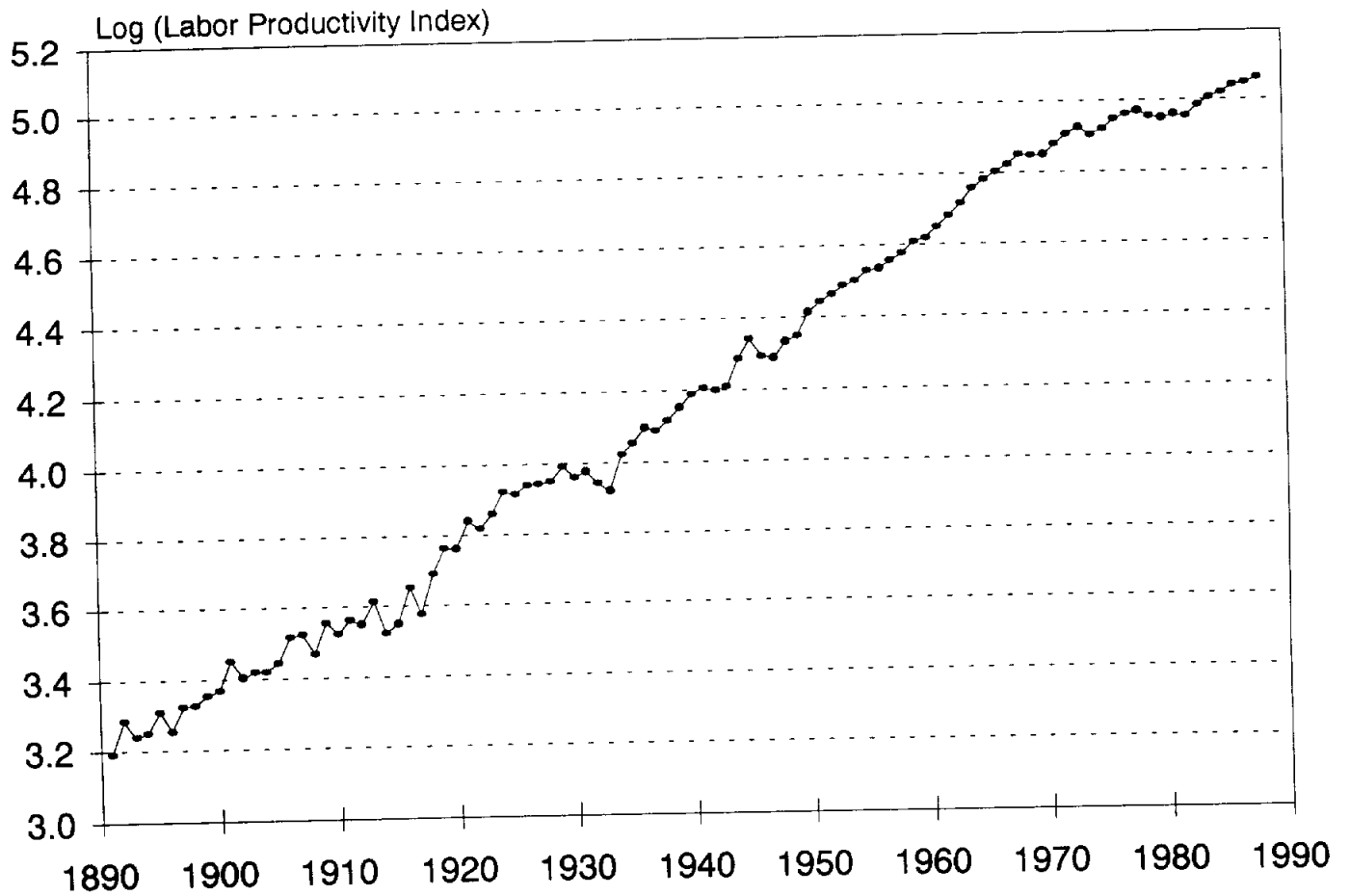


Figure 2: Log Non-Farm Hourly Labor Productivity Index (1987 = 1.0), 1900-1988

Sources and Notes:

1900-47: Historical Statistics (1975), series D 683; 1947-1988: U.S. Department of Labor, Bureau of Labor Statistics (1989). The series are connected at 1947 using a 5-year average to splice.

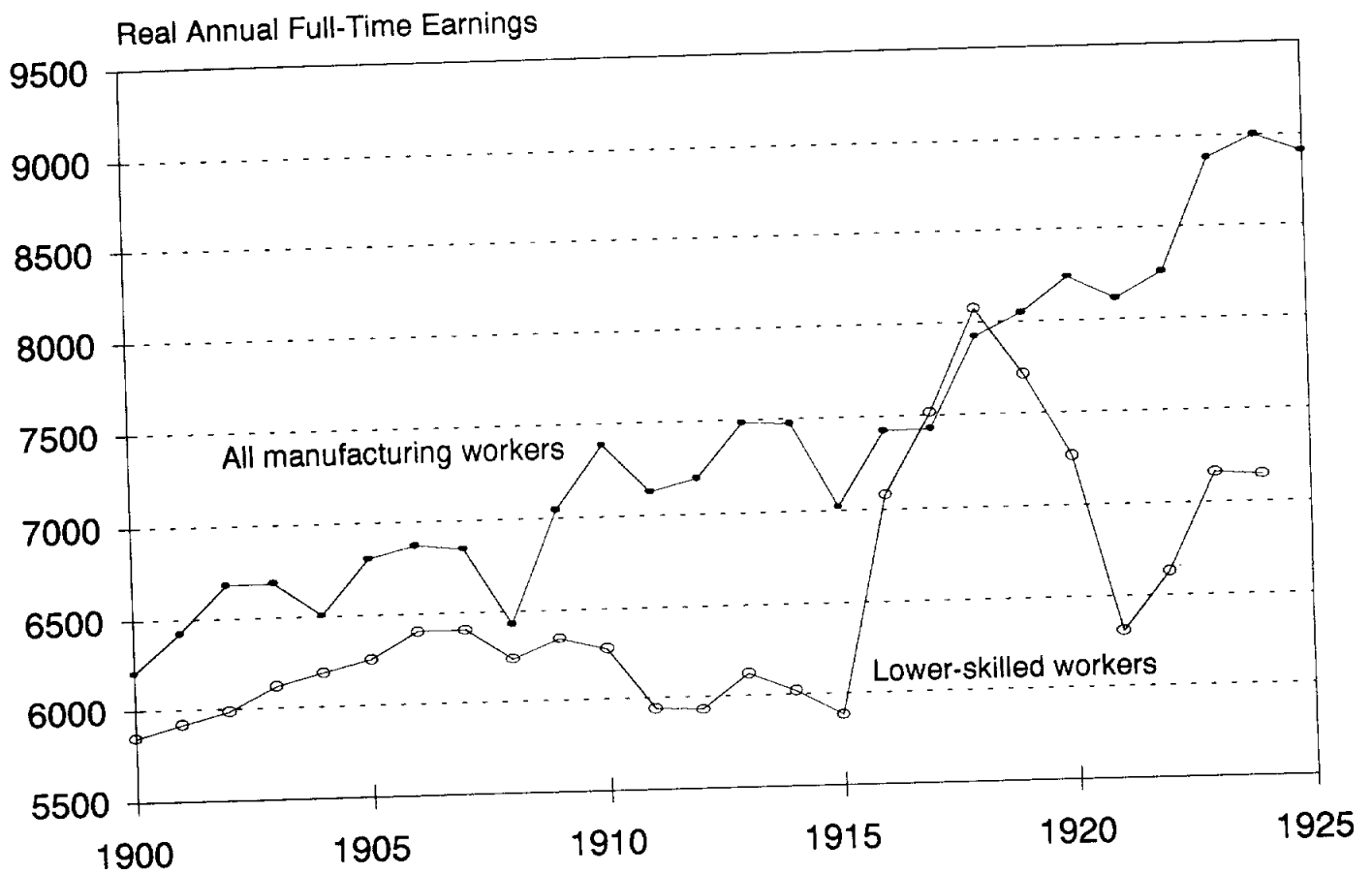


Figure 3: Real Annual Earnings in Manufacturing and for Lower-Skilled Workers, 1900-1924

Sources and Notes:
 Earnings for manufacturing workers: *Historical Statistics* (1975), series D 740; earnings of lower-skilled workers: *Historical Statistics* (1975), series E 778 and Coombs (1926). The Coombs data are full-time weekly earnings. Full-time annual earnings are weekly earnings \times 52. Because the lower-skilled earnings data are defined as "full-time" both weekly and annually, they are higher than those for all manufacturing workers in two years. For the price deflator, see sources to Figure 1.

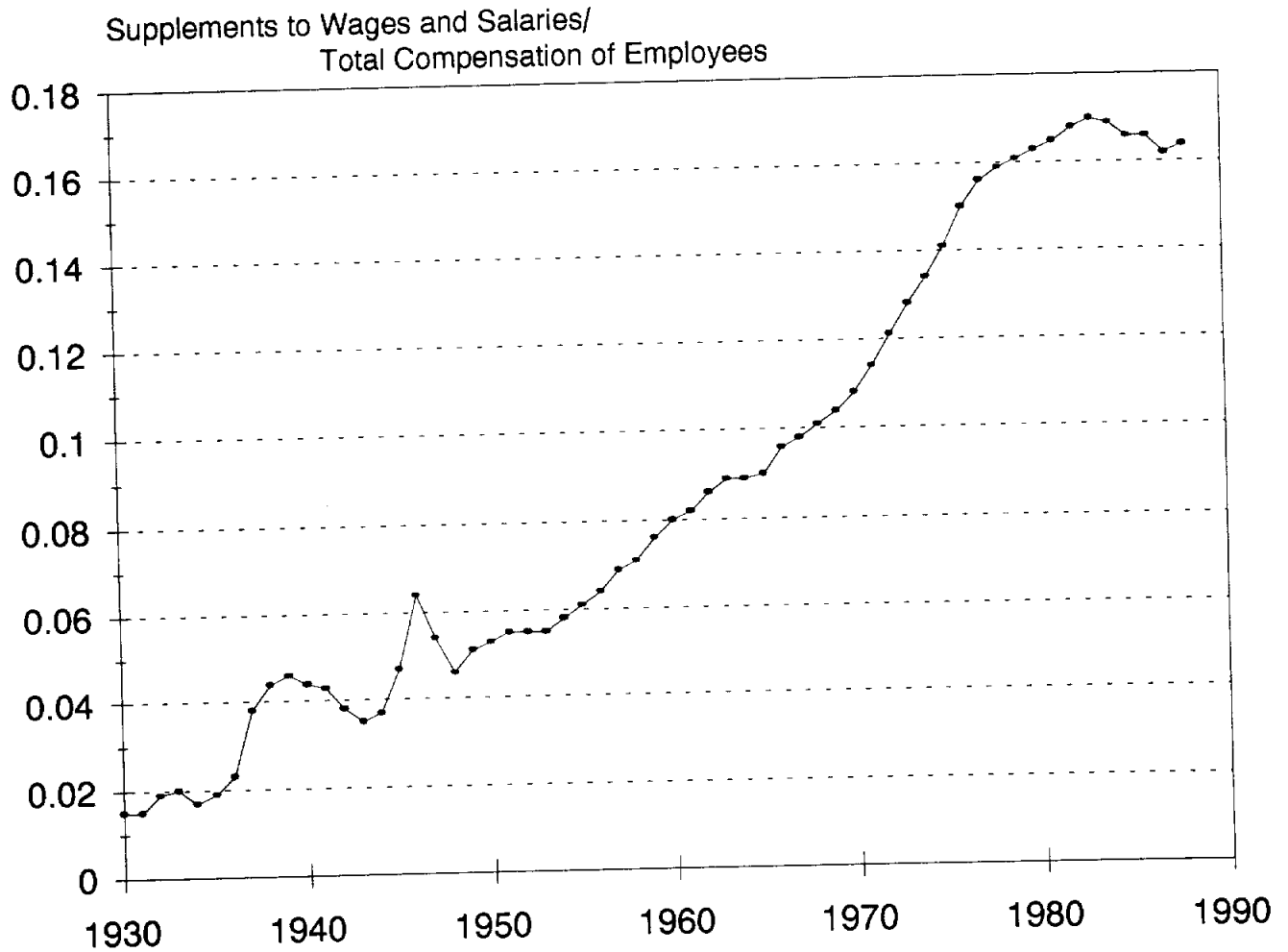


Figure 4: Fringe Benefits as a Proportion of Total Compensation, 1929-1988

Sources and Notes:

Fringe benefits are defined as total supplements to wages and salaries, including both employer contributions to social insurance programs and employer contributions to private programs. 1929-58: U.S. Department of Commerce, Bureau of Economic Analysis (1993), table 1.14; 1959-88: U.S. Department of Commerce, Bureau of Economic Analysis (1992), table 1.14.

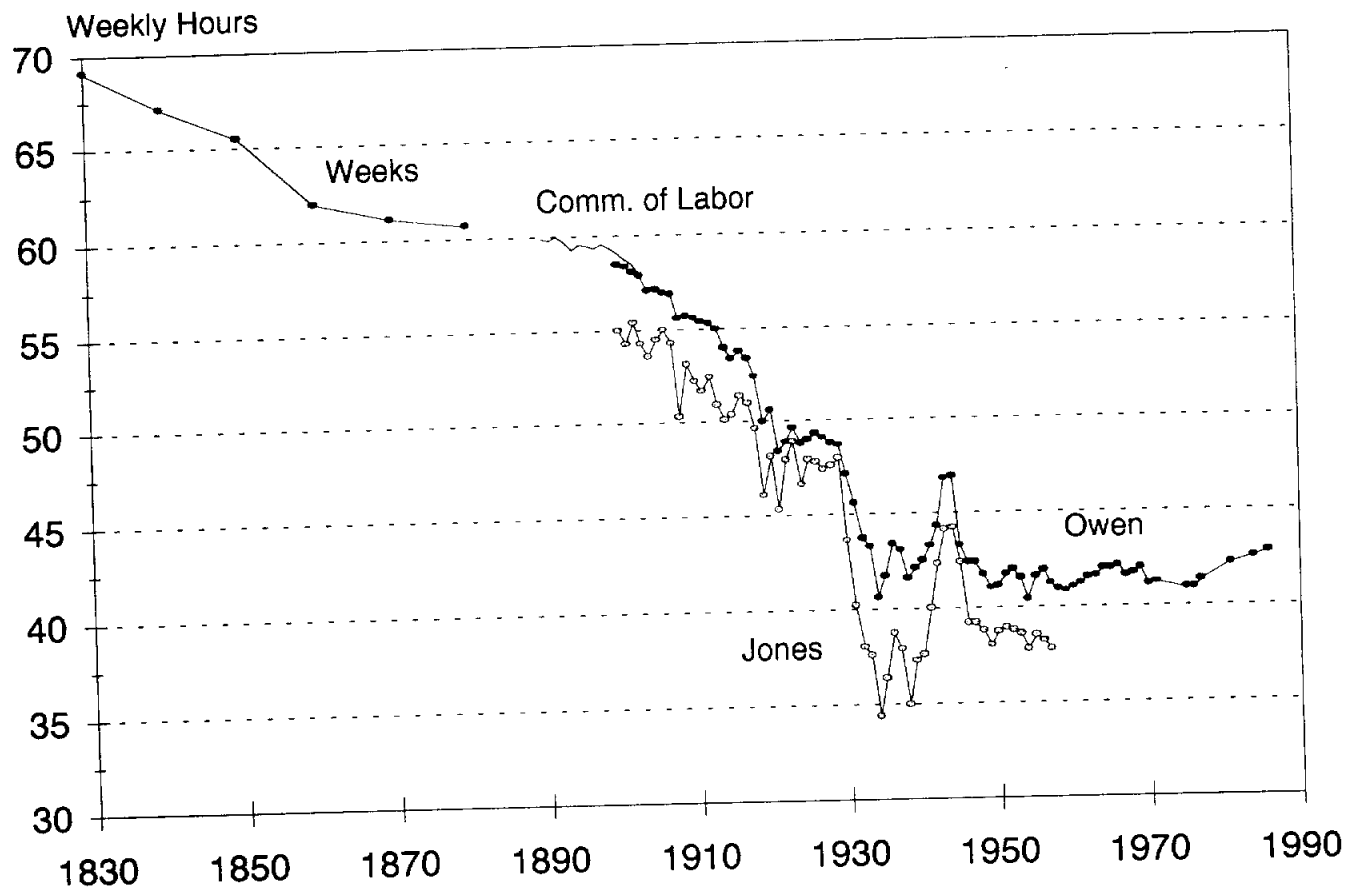


Figure 5: Hours of Work, 1830-1986

Sources and Notes:

Whaples (1990) for all four series: Weeks Report (1830-1880), Commissioner of Labor (1890-1903), Jones (1900-1957), and Owen (1900-1986). Weeks Report series is from U.S. Department of the Interior, Census Office (1883) is for scheduled hours among manufacturing workers. See Whaples for possible biases in the data. Commissioner of Labor series was computed by Leo Wolman from U.S. Commissioner of Labor (1905) and includes urban manufacturing and construction workers. Jones series is from Jones (1963) and is for manufacturing workers. Jones corrects for paid vacations, holidays, and sick leave. Owen series is from Owen (1976, 1988) and is for male non-students. The post-1940 Owen data are for all (private, non-agricultural) workers, not just those in manufacturing.

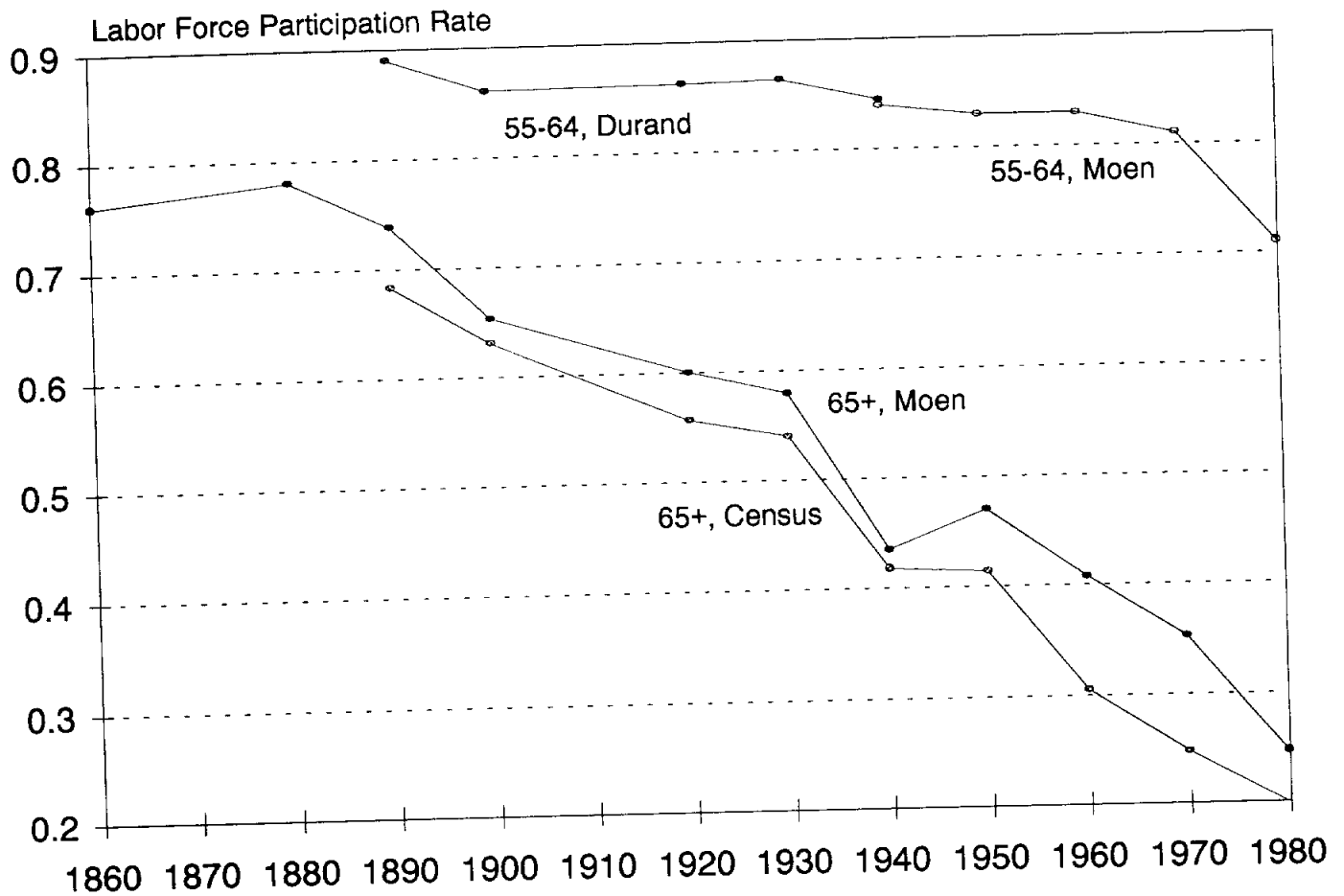


Figure 6: Labor Force Participation Rates of Older Men, 1860-1980

Sources and Notes:
 65+, Moen and 55-64, Moen: Moen (1987a); 65+, Census: Historical Statistics (1975) series D 34; 55-64, Durand: Durand (1948). See also Costa (1993) for a discussion of these and other series.

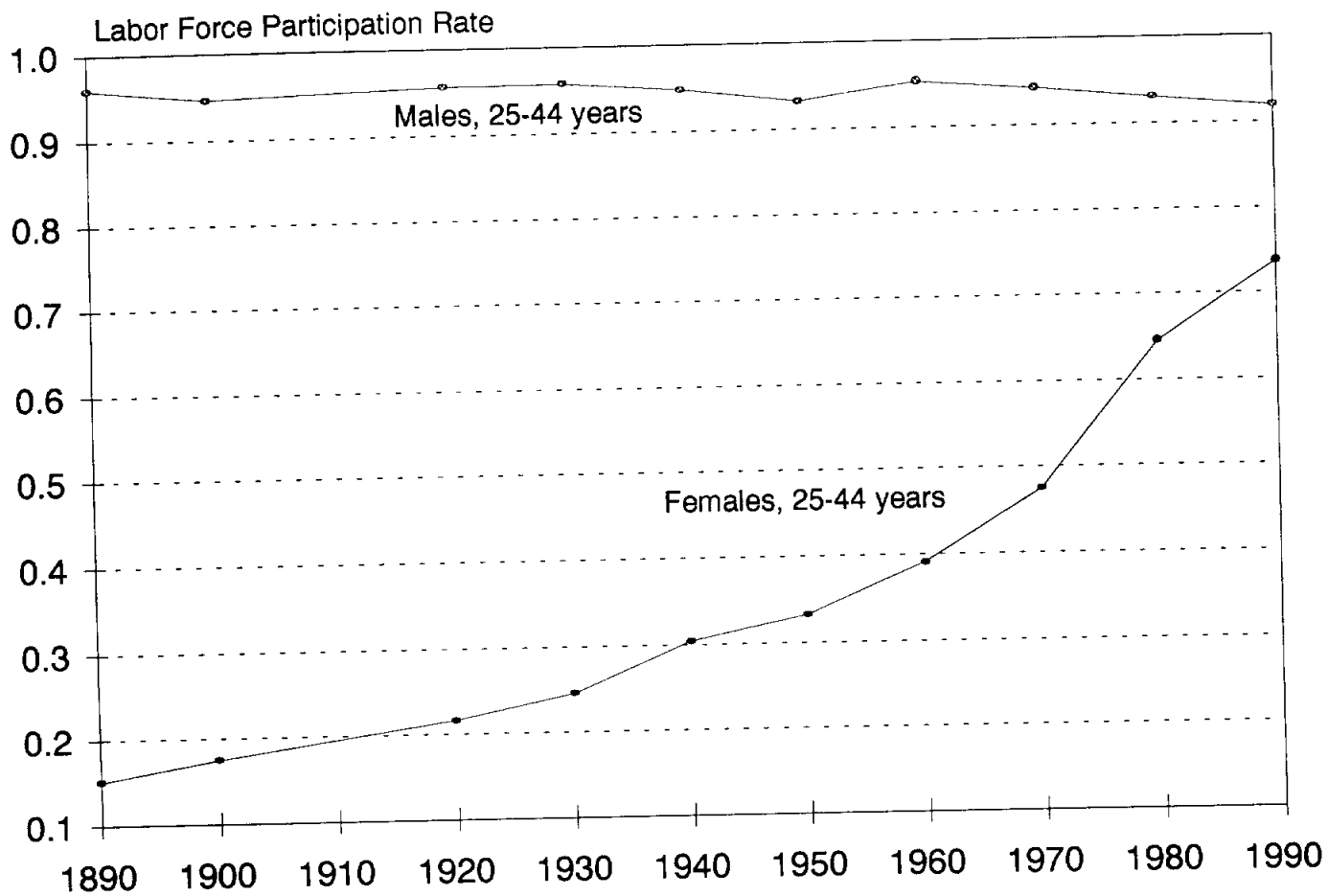


Figure 7: Labor Force Participation Rates of Men and Women, 25 to 44 Years: 1900-1990

Source: Table 1.

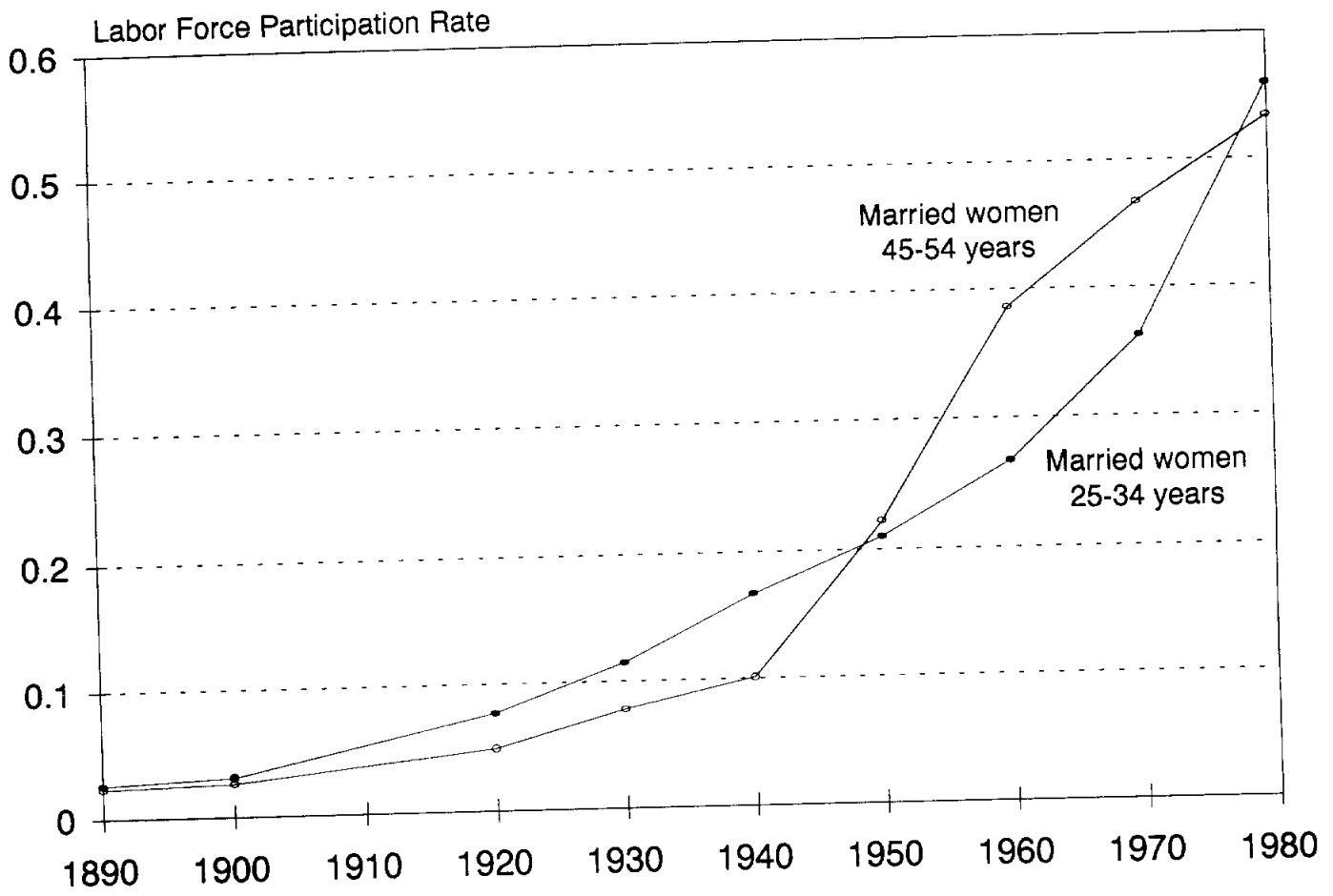


Figure 8: Labor Force Participation Rates for Two Age Groups of Married (White) Women, 1900-1990

Source: Goldin (1990), table 2.2.

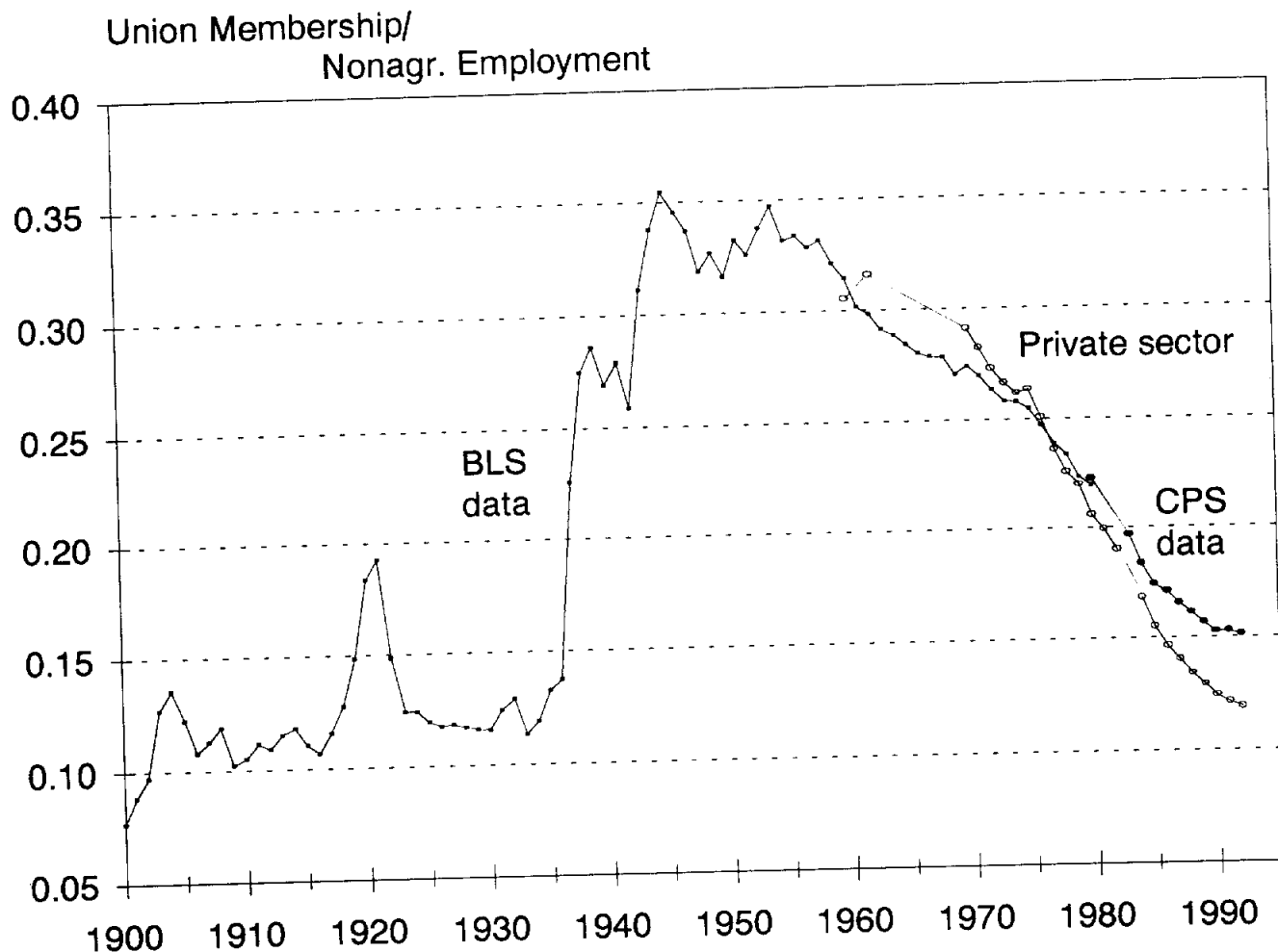


Figure 9: Union Membership as a Fraction of Nonagricultural Employment, 1900-1992

Sources and Notes:

Union membership: 1900-1914 Friedman (1993); 1915-1929 Historical Statistics (1975) series D 940; 1930-1970 Historical Statistics (1975) series D 948; 1971-1980 Bureau of Labor Statistics, unpublished data, table 1; 1981-1992 Employment and Earnings (January).

Private-sector membership: 1960-1982 Troy and Sheflin (1985), table 3.62; 1983-1991 Employment and Earnings (January).

The BLS data for 1971-1980 are a direct continuation of series D 940 and exclude members of public and professional employee associations. The data from Employment and Earnings differ from the D 940 series because they are CPS data from households on members of labor organizations, as opposed to data from labor organizations, and they include all members of labor organizations. The total union data in Troy and Sheflin (1985) differ slightly from those in the above sources.

Nonagricultural employment: 1900-1970 Historical Statistics (1975) series D 127; 1971-1992 Employment and Earnings (January). Private-sector nonagricultural employment excludes those employed by federal, state, and local government.

The union membership data in Friedman (1993) exclude Canadian members of U.S. unions and make improvements on earlier series reported in Historical Statistics (1975) for the period. The data for 1915-1929 (series D 940) include Canadian members; those for 1930-1991 (series D 948) exclude them. The bias in the 1915-1929 series is probably small -- on the order of 6 percent, which is what Canadian membership was as a fraction of the total in 1930.

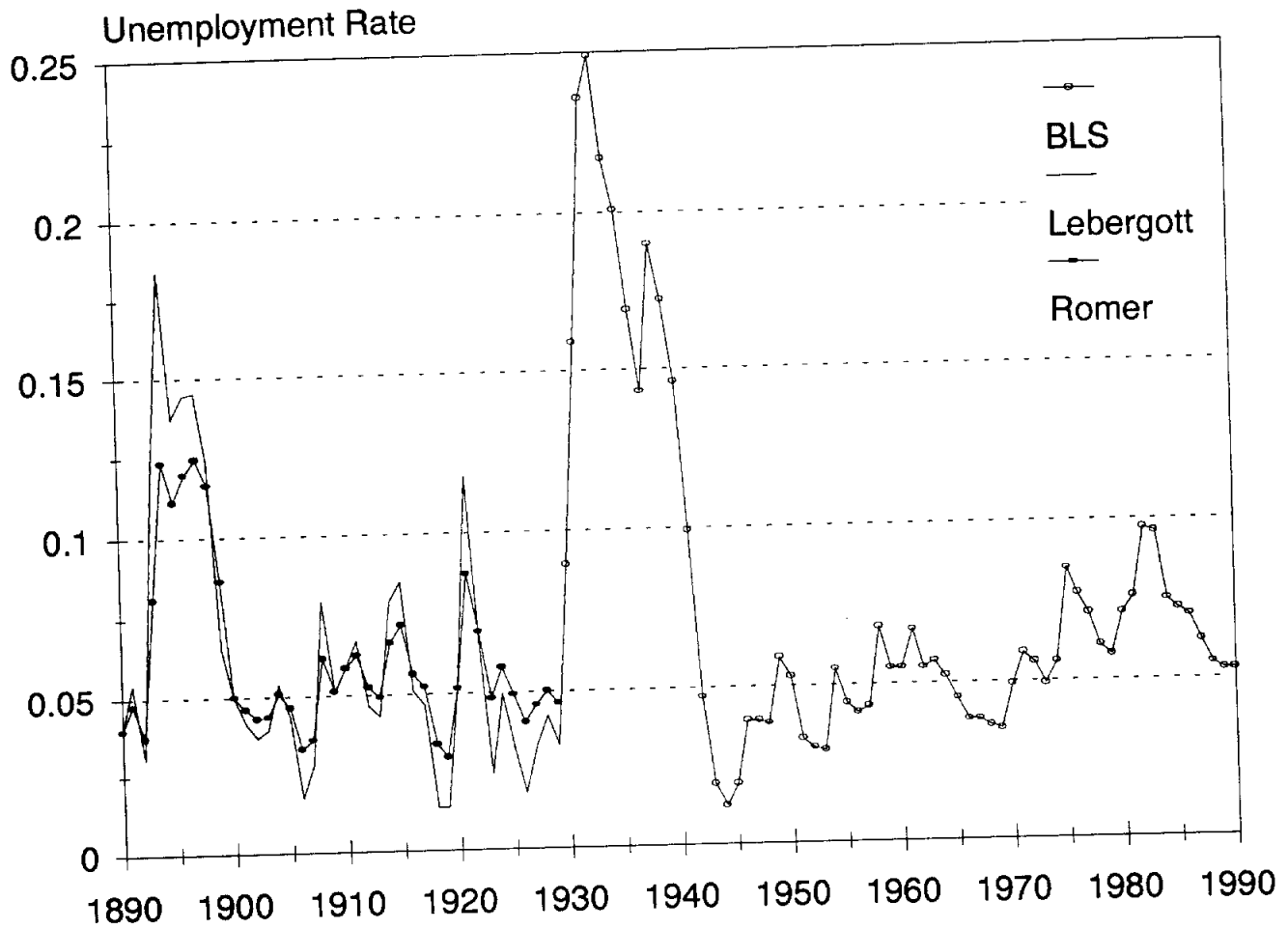


Figure 10: The Aggregate Unemployment Rate, 1890 to 1990

Sources and Notes:

BLS: 1930-1970 Historical Statistics, series D 85-86; 1970-1990 Employment and Earnings.
 Lebergott: 1890-1929 Lebergott (1964), tables A-3 and A-15, or Historical Statistics, D 85-86.
 Romer: Romer (1986b).

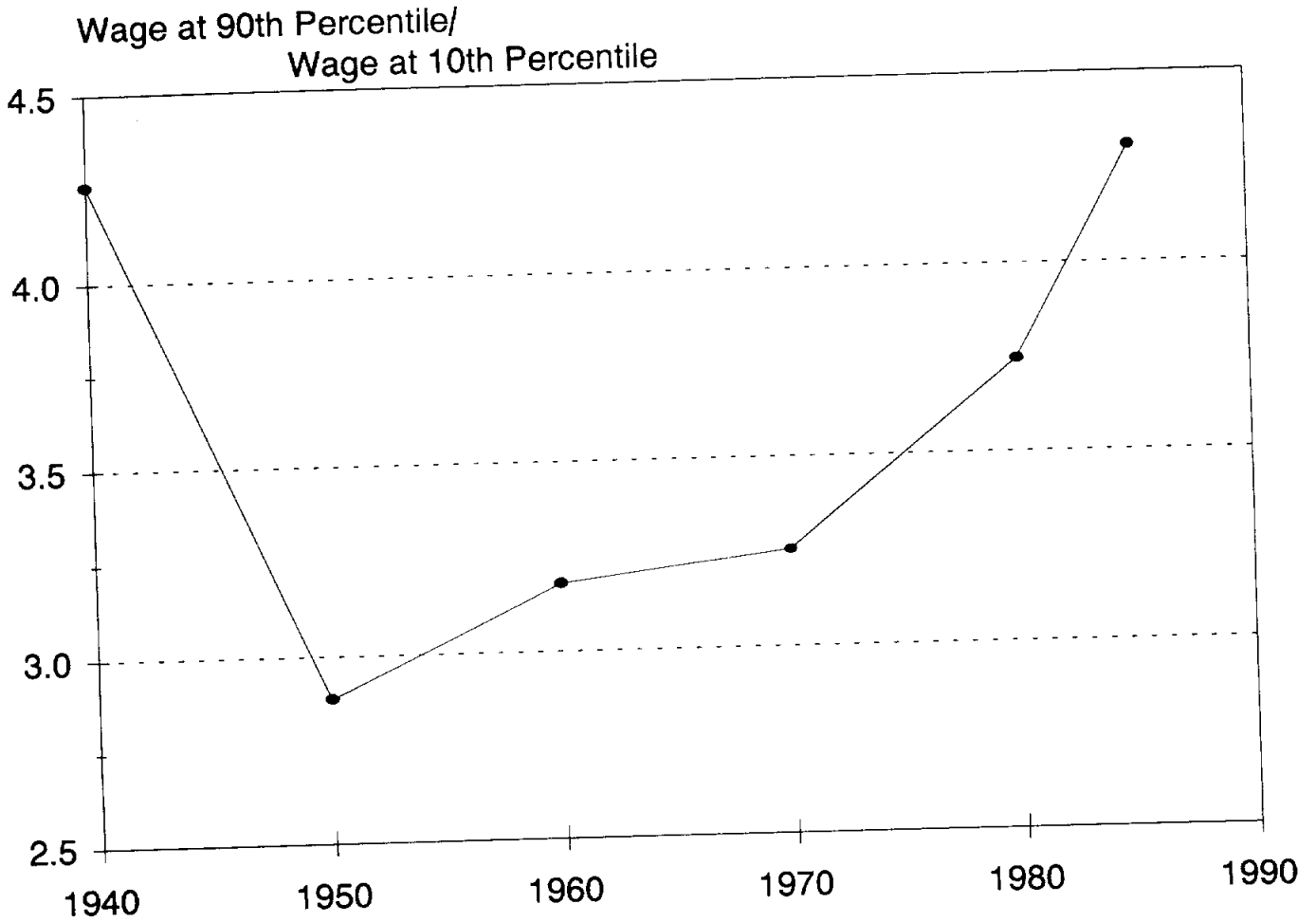


Figure 11: Wage Dispersion across the Past Half Century: The Ratio of the Weekly Wage at the Ninetieth and Tenth Percentiles, 1940 to 1985

Source and Notes: Goldin and Margo (1992), table I. The sample includes men (> 21 years old) who worked > 34 hours in the survey week and > 39 weeks during the year, were wage or salary earners, and earned more than one-half the prevailing minimum wage on a full-time basis.

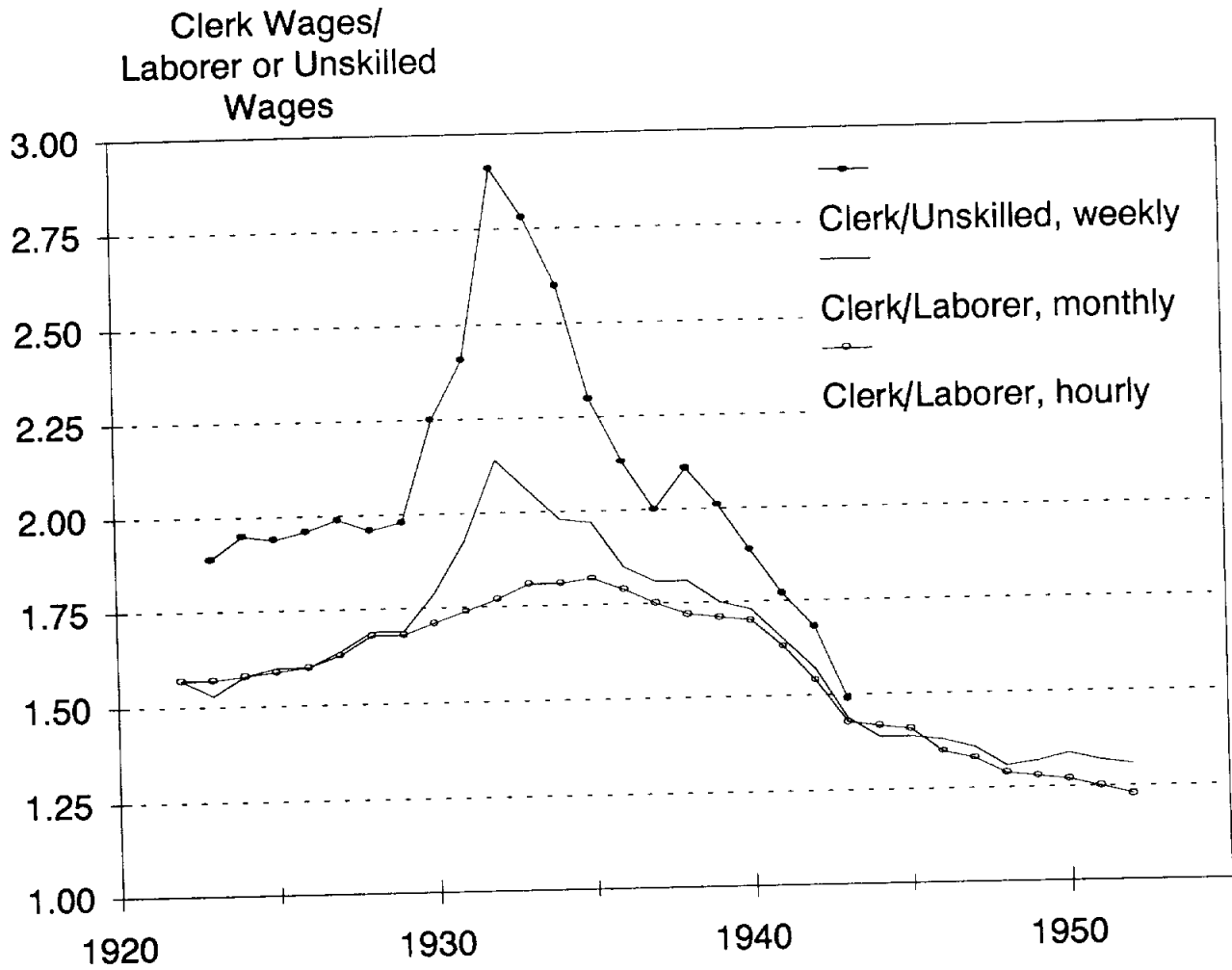


Figure 12: Wage Differentials for White Collar and Blue Collar Workers, 1922-1952

Source and Notes: Goldin and Margo (1992), table VII. The weekly series for clerks is for male office workers in New York State factories, and the corresponding series for the unskilled is for production workers in 25 industries (Beney 1936). The hourly and monthly series are for workers on class-I steam railroads.

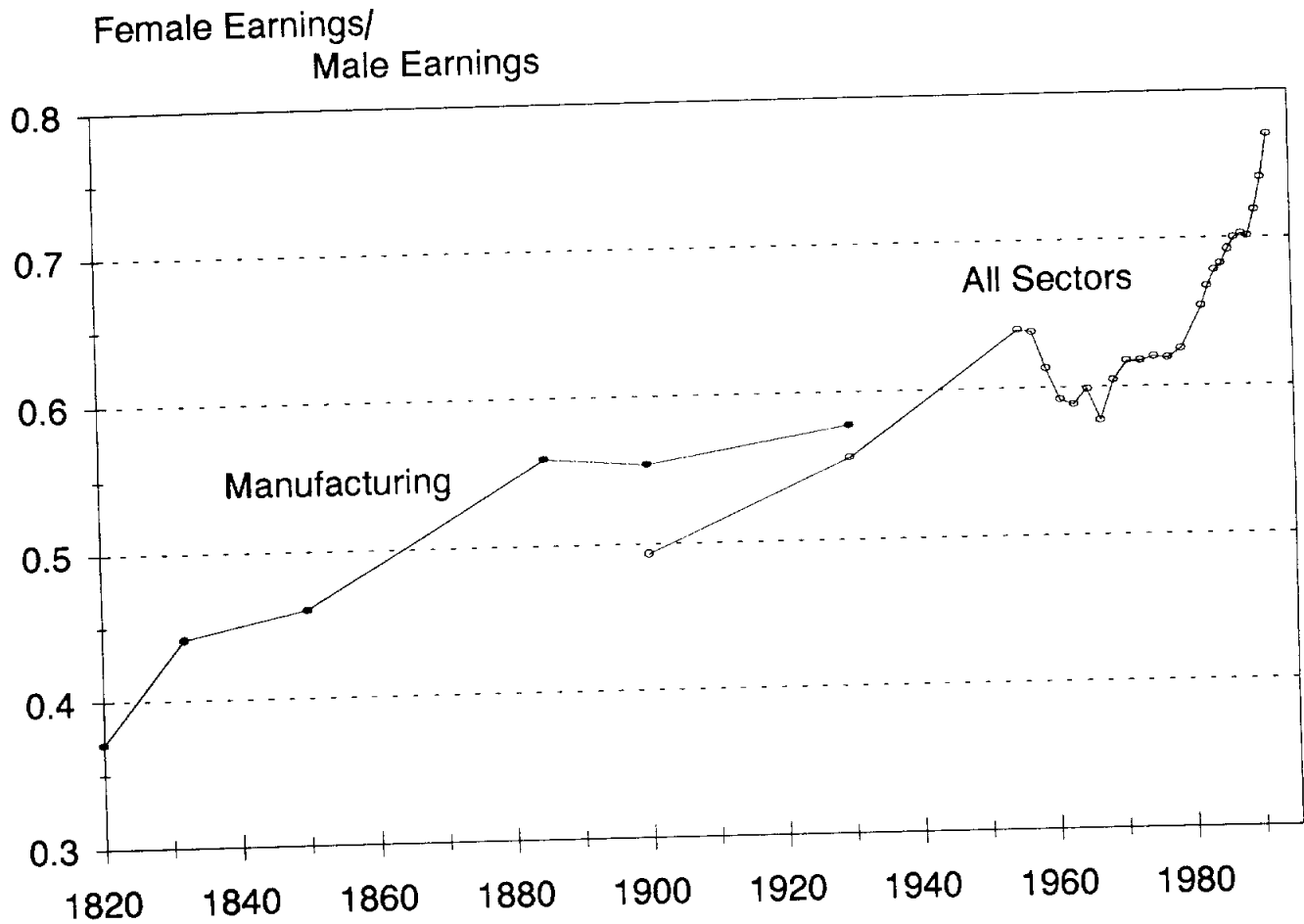


Figure 13: Gender Differences in Earnings, 1820 to 1992

Sources and Notes:

Manufacturing: 1820-1930 Goldin (1990), table 3.1. New England data used for 1820 to 1850; weekly full-time used for 1930.

All Sectors: 1900 and 1930 Goldin (1990), table 3.2; 1955-1969 Goldin (1990), table 3.1, median year-round earnings; 1971-1987 Goldin (1990) table 3.1, median weekly wage and salary income; 1988-1992 Employment and Earnings.

Public and Private Secondary School Rates

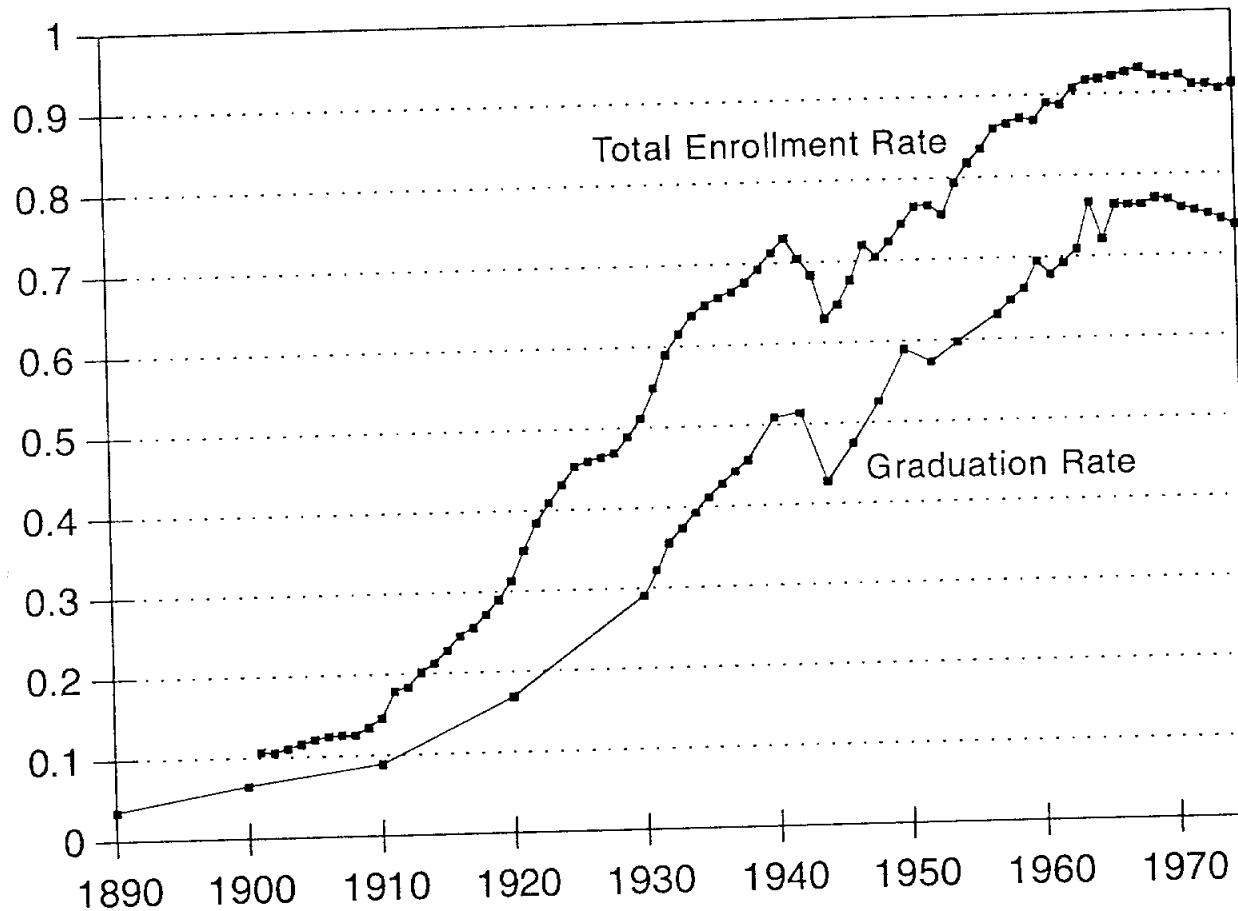


Figure 14: Secondary School Enrollment and Graduation Rates, 1890 to 1975

Notes: Enrollment figures are divided by the number of 14 to 17 year olds; graduation figures are divided by the number of 17 year olds. Total includes both males and females in public and private schools.

Sources: U.S. Department of Education, 120 Years of American Education: A Statistical Portrait. Washington, D.C.: US GPO (1993).

Table 1: Labor Force Participation Rates by Age and Sex, and the Fraction of Women and the Foreign Born in the Labor Force: 1890 to 1990

Year	Males					Females					Females/ All ^b	Foreign Born/ All ^c
	16-19 ^a	20-24	25-44	45-64	\$ 65	16-19 ^a	20-24	25-44	45-64	\$ 65	All Ages	All Ages
<i>Current Population Survey (annual averages)</i>												
1990	55.7	84.3	94.3	80.4	16.4	51.8	71.6	74.9	59.2	8.7	0.45	
1980	62.0	87.0	95.5	82.2	19.1	53.3	69.2	65.5	50.9	8.1	0.42	
1970	58.4	86.6	96.8	89.3	26.8	44.0	57.8	47.9	49.3	9.7	0.37	
1960	59.4	90.2	97.7	92.0	33.1	39.4	46.2	39.9	44.3	10.8	0.33	
<i>Decennial Census</i>												
1970	47.2	80.9	94.3	87.2	24.8	34.9	56.1	47.5	47.8	10.0	0.37	
1960	50.0	86.2	95.3	89.0	30.5	32.6	44.8	39.1	41.6	10.3	0.32	
1950	51.7	81.9	93.3	88.2	41.4	31.1	42.9	33.3	28.8	7.8	0.28	
1940	34.7	88.1	94.9	88.7	41.8	24.8	45.6	30.5	20.2	6.1	0.25	0.11
1930	40.1	88.8	95.8	91.0	54.0	22.8	41.8	24.6	18.0	7.3	0.22	
1920	51.5	89.9	95.6	90.7	55.6	28.4	37.5	21.7	16.5	7.3	0.20	
1910 ^d	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	
1900	62.0	90.6	94.7	90.3	63.1	26.8	31.7	17.5	13.6	8.3	0.18	0.26
1890	50.0	90.9	96.0	92.0	68.3	24.5	30.2	15.1	12.1	7.6	0.17	

Table 1, continued

^aThe labor force participation of 16-19 year olds is overcounted in the Current Population Survey compared with U.S. decennial census, particularly during the period before 1940. Many employed teenagers were also at school. See text.

^b Females/All is the fraction of the entire labor force composed of women (of all ages).

^c Foreign born/All is the fraction of the non-agricultural labor force composed of foreign-born whites.

^d The data for 1910 overcount certain types of workers, in comparison with other censuses, by including unpaid farm and family help.

Sources:

1890-1970: *Historical Statistics* (1975), series D 29-41; 1980: *Employment and Earnings*, vol. 28, no. 1, table 4; 1990: *Employment and Earnings*, vol. 38, no. 1, table 3 for 1990. FB/All 1900: U.S. Department of Commerce and Labor, Bureau of the Census (1904), table 2; 1940: U.S. Department of Commerce, Bureau of the Census (1943).

Table 2: Industrial Distribution of Employees on Nonagricultural Payrolls, 1900 to 1990 (in percentages)

Year	<i>Goods Producing</i>			<i>Service Producing</i>					Total
	<i>Mining and Construction</i>	<i>Manufacturing</i>	<i>Total</i>	<i>Transportation and Public Utilities</i>	<i>Trade</i>	<i>FIRE^a</i>	<i>Services</i>	<i>Government</i>	
1990	5.3	17.4	22.7	5.3	23.5	6.1	25.7	16.7	77.3
1980	6.0	22.4	28.4	5.7	22.5	5.7	19.8	17.9	71.6
1970	5.6	27.4	33.0	6.4	21.1	5.2	16.5	17.8	67.0
1960	6.6	31.0	37.6	7.4	21.0	4.9	13.7	15.4	62.4
1950	7.2	33.7	40.9	8.9	20.8	4.2	11.9	13.3	59.1
1940	6.9	33.9	40.8	9.4	20.8	4.6	11.4	13.0	59.2
1930	8.1	32.5	40.6	12.5	19.7	5.0	11.5	10.7	59.4
1920	7.4	39.0	46.4	15.7	14.6	3.3	11.3	8.6	53.5
1910	11.1	36.1	47.2	15.5	16.5	2.2	11.1	7.5	52.8
1900	11.8	36.0	47.8	15.0	16.5	2.0	11.5	7.2	52.2

^a FIRE = finance, insurance, and real estate.

Notes: Because these data are derived from payroll information, they exclude the self employed and may double-count those with multiple employers.

Sources: 1900-1970 *Historical Statistics* (1975), series D 127-141; 1980-1990 *Employment and Earnings*, vol. 39, no. 1, table 65 for 1990, vol. 29, no. 1, table 1, for 1980.

Table 3: Occupational Distribution of the Labor Force: 1900 to 1990 (in percentages)

	<i>1990^a</i>	<i>1980</i>	<i>1970^b</i>	<i>1960^c</i>	<i>1950^c</i>	<i>1940</i>	<i>1930</i>	<i>1920</i>	<i>1910</i>	<i>1900</i>
White-collar workers	57.1	53.9	47.9	42.3	36.7	31.1	29.4	24.9	21.4	17.6
Professional, technical	16.7	16.5	14.7	11.4	8.6	7.5	6.8	5.4	4.7	4.3
Managers, officials, proprietors	12.6	12.0	8.2	8.5	8.8	7.3	7.4	6.6	6.6	5.8
Clerical	15.8	18.6	17.9	14.9	12.3	9.6	8.9	8.0	5.3	3.0
Sales	12.0	6.8	7.2	7.5	7.0	6.7	6.3	4.9	4.7	4.5
Manual and service workers	40.0	43.2	49.0	51.4	51.4	51.5	49.4	48.1	47.7	44.9
Manual	26.6	31.1	36.3	39.7	41.0	39.8	39.6	40.2	38.2	35.8
Craft, supervisors	11.6	13.3	13.8	14.3	14.2	12.0	12.8	13.0	11.6	10.5
Operatives	10.9	13.5	17.8	19.9	20.3	18.4	15.8	15.6	14.6	12.8
Laborers (except farm, mine)	4.1	4.3	4.7	5.5	6.6	9.4	11.0	11.6	12.0	12.5
Service	13.4	12.1	12.7	11.8	10.4	11.7	9.8	7.8	9.6	9.0
Private household	0.7	0.8	1.5	2.8	2.6	4.7	4.1	3.3	5.0	5.4
Other service	12.7	11.3	11.2	9.0	7.8	7.1	5.7	4.5	4.6	3.6
Farm workers	2.9	2.9	3.1	6.3	11.9	17.4	21.2	27.0	30.9	37.5
Farmers, farm managers	n.a.	1.7	1.8	3.9	7.5	10.4	12.4	15.3	16.5	19.9
Farm laborers, supervisors	n.a.	1.2	1.3	2.4	4.4	7.0	8.8	11.7	14.4	17.7

Table 3, continued

^a Occupational classifications change between 1980 and 1990. Some occupations in the clerical group are assigned to the sales category, and there are reclassifications between the professional and managerial groups. The laborer category in 1990 includes handlers, equipment cleaners, helpers, and laborers. Operatives are machine operators, assemblers, and inspectors. Craft and supervisors include precision production, craft, and repair workers. Clerical workers are administrative support workers, including clerical.

^b Greater than or equal to 14 years old, for consistency with previous years; difference with greater than or equal to 16 years old is slight.

^c Uses 1960 occupational classifications.

n.a. = not available

Notes: The data source for 1970, 1960, and 1950 has a separate category for the “currently unemployed.” In 1970 the currently unemployed were 6.5 percent of the labor force; they were 5.1 percent in 1960 and 2.3 percent in 1950. The table figures for those years give, instead, the fraction of the currently employed labor force. Figures may not sum properly due to rounding.

Sources: 1900-1970 *Historical Statistics* (1975), series D 182-232; 1980-1990 *Employment and Earnings*.

Table 4: Occupational Distribution of the Non-Farm Labor Force, by Sex: 1900 to 1990 (in percentages)

	1990 ^a	1980	1970 ^b	1960 ^c	1950 ^c	1940	1930	1920	1910	1900
<i>Male Non-Farm Labor Force Participants</i>										
White-collar workers	48.1	44.2	41.7	38.7	36.0	34.0	33.5	30.7	30.9	30.1
Professional, technical	15.7	16.2	14.8	11.4	8.5	7.4	6.4	5.5	5.3	5.8
Managers, officials, proprietors	14.5	15.0	11.6	11.8	12.4	10.9	11.6	11.2	11.6	11.7
Clerical	6.2	6.7	7.9	7.8	7.7	7.4	7.3	7.6	6.7	4.8
Sales	11.7	6.3	7.4	7.7	7.4	8.2	8.1	6.5	7.1	7.8
Manual and service workers	51.9	55.9	58.3	61.3	64.0	66.0	66.5	69.3	69.1	69.9
Manual	41.8	46.7	49.8	54.3	56.7	58.3	60.1	63.9	63.2	64.5
Craft, supervisors	20.3	21.9	22.1	22.5	22.4	19.8	21.5	23.0	21.6	21.6
Operatives	15.0	17.5	20.5	23.2	24.1	23.0	20.4	20.7	19.2	17.8
Laborers (except mine)	6.5	7.3	7.2	8.5	10.2	15.5	18.2	20.2	22.4	25.2
Service	10.2	9.2	8.6	7.1	7.3	7.7	6.4	5.4	5.9	5.4
Private household	0.0	0.1	0.1	0.2	0.2	0.4	0.3	0.2	0.3	0.4
Other service	10.2	9.1	8.5	6.9	7.1	7.3	6.1	5.1	5.6	5.0

Table 4, continued

	1990 ^a	1980	1970 ^b	1960 ^c	1950 ^c	1940	1930	1920	1910	1900
<i>Female Non-Farm Labor Force Participants</i>										
White-collar workers	71.4	66.4	61.8	57.4	54.7	46.8	48.3	44.9	31.0	22.0
Professional, technical	18.8	17.0	15.6	13.5	12.8	13.3	15.1	13.5	11.6	10.1
Managers, officials, proprietors	11.2	7.0	3.7	3.9	4.5	3.4	3.0	2.6	2.4	1.7
Clerical	28.1	35.5	35.1	31.5	28.5	22.4	22.8	21.6	11.0	4.9
Sales	13.2	6.9	7.4	8.5	8.9	7.7	7.5	7.2	6.0	5.3
Manual and service workers	28.6	33.6	38.2	42.6	45.3	53.2	51.7	55.1	69.0	78.0
Manual	10.7	13.9	17.9	19.4	23.1	22.5	21.7	27.5	30.5	34.3
Craft, supervisors	2.2	1.8	1.9	1.3	1.6	1.1	1.1	1.4	1.7	1.8
Operatives	6.9	10.8	15.0	17.5	20.6	20.3	19.0	23.4	27.1	29.3
Laborers (except mine)	1.6	1.2	1.0	0.6	0.9	1.1	1.6	2.7	1.7	3.2
Service	17.9	19.7	20.4	23.2	22.2	30.7	30.0	27.6	38.5	43.7
Private household	1.4	2.5	3.9	8.5	9.1	18.9	19.4	18.2	28.5	35.4
Other service	16.5	17.2	16.5	14.6	13.0	11.8	10.6	9.4	10.0	8.3

Table 4, continued

^a Occupational classifications change with 1990. Some occupations in the clerical group are assigned to the sales category, and there are reclassifications between the professional and managerial groups. The laborer category in 1990 includes handlers, equipment cleaners, helpers, and laborers. Operatives are machine operators, assemblers, and inspectors. Craft and supervisors include precision production, craft, and repair workers. Clerical workers are administrative support workers, including clerical.

^b Greater than or equal to 14 years old, for consistency with previous years. Difference with greater than or equal to 16 years old is slight.

^c Uses 1960 occupational classifications.

Notes: Columns may not sum to 100 percent due to rounding error.

Sources: 1900-1970 *Historical Statistics* (1975), series D 182-232; 1980-1990 *Employment and Earnings*, vol. 38, no. 1, table 21 for 1990, vol. 28, no. 1, table 22 for 1980.

Table 5: Self-Employed as a Percentage of Non-Farm (White) Males by Age: 1910, 1940, and 1990

<i>Age</i>	<i>1910</i>	<i>1940</i>	<i>1990</i>
25-34	13.9	9.6	8.7
35-44	22.5	15.6	12.7
45-54	27.3	18.3	14.4
55-64	30.6	20.3	19.2
25-64	21.5	14.9	12.5

Notes: The 1910 census asked whether an individual was an employee, employer, or “works on own account.” For 1910, self-employment is defined here as employer or “works on own account.” Some who gave the latter answer may not have been self-employed but were out of the labor force. It is doubtful that all but a few in the age groups given were out of the labor force. I excluded all men with farm-related occupations. The 1940 census asked class of worker, among which “employer” and “works on own account” were possible responses. A far greater fraction of the self-employed in 1940 than in 1910 listed themselves as “works on own account.” The percentages listed above exclude those “out of the labor force.” To the extent that some individuals in 1910 were not in the labor force, the difference in the two years in the level of self employment is understated. The 1940 percentages exclude the agricultural population. In the 1990 Current Population Survey self-employment is defined as “self employed, not incorporated.” Only currently employed white males are included in all censuses.

Sources: 1910 Public Use Microdata Sample, 1940 Public Use Microdata Sample, 1990 Current Population Survey.

Table 6: Mean Number of Workers per Manufacturing Establishment and Fraction Production Workers: 1899 to 1982

	<i>Production Workers/Establishments</i>	<i>All Workers/Establishments</i>	<i>Production Workers/All Workers</i>
1982	35.6	51.1	.696
1977	39.0	52.8	.739
1972	43.3	57.7	.750
1967	45.7	60.5	.755
1954	43.1	55.2	.791
1931	35.9	n.a.	n.a.
1921	33.7	40.2	.838
1909	23.6	27.5	.859
1899	22.0	23.7	.928

n.a. = not available

Sources and Notes: 1899-1967 *Historical Statistics* (1975), series P 1, 4, 5. Establishments are factories, excluding hand and neighborhood industries such as blacksmith shops. 1972-1982 U.S. Department of Commerce, Bureau of the Census (1988), table 1a. There is perfect agreement between *Historical Statistics* and the later source for the years of overlap.

Table 7: Labor Force Participation Rates of 10 to 15 Year Olds and Fraction Working in Agriculture: 1880, 1900, and 1930

	1880	1900	1930
<i>Labor force participation rates of youths, 10 to 15 years old</i>			
Males	24.4	26.1	6.4
Females	9.0	6.4	2.9
<i>Percentage of 10 to 15 year old working youths in agricultural employment</i>			
Males	70.9	67.6	74.5
Females	46.4	74.5	61.3

Sources:

1880, 1900 U.S. Department of Commerce and Labor, Bureau of the Census (1904, p. cxlviii, cxlix)
 1930 U.S. Department of Commerce, Bureau of the Census (1933), tables 1, 3.

Notes:

Percentage of working youths in agriculture is the percentage of all child labor, for the sex and age group given, laboring in the agricultural sector.

Table 8: Distribution of Unemployment for Manufacturing Workers: by State, 1880s-1890s, and for the United States, 1910

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
	<i>California, 1892</i>	<i>Kansas, 1884/87</i>	<i>Maine, 1890</i>	<i>Michigan, 1889</i>		<i>United States, 1910</i>	
					<i>Manufacturing Workers</i>	<i>Employed^a Mfg. Workers</i>	<i>Mfg., Transportation, Mining</i>
No unemployment	67.9	37.2	48.4	38.9			
1 day < 1 week	2.5	2.1	0.1	1.8	68.1	74.1	68.4
1 < 2 weeks	2.8	2.2	1.1	0.5	0.5	0.5	0.4
2 weeks < 1 month	4.2	5.0	5.4	16.8	2.3	2.3	2.1
1 < 2 months	6.8	13.1	11.4	21.6	4.6	4.6	4.3
2 < 3 months	5.6	11.6	12.9	11.2	5.1	5.0	4.9
3 < 4 months	3.3	10.9	13.8	4.5	3.9	3.8	3.6
4 < 5 months	2.2	5.4	3.9	2.1	1.6	1.4	1.7
5 < 6 months	3.2	5.6	2.6	0.6	1.4	1.2	1.4
\$ 6 months	1.8	7.0	0.5	2.0	12.7	7.2	13.2
Days unemployed ^b	62.3	80.8	69.9	40.3	–	–	–
Weeks unemployed	–	–	–	–	12.5	12.4	13.2
% with unemployment ^c	32.2%	62.8%	51.6%	62.2%	31.9%	25.9%	31.7%
Workyear, days ^d	306.5	306.3	302.6	303.6	n.a.	n.a.	n.a.
Unemployment rate ^e	6.5	16.6	11.9	8.2	7.7	6.2	8.0
Number of observations	2398	1057	746	4412	14389	12834	21054

^a Including only manufacturing workers who were employed on April 15, 1910.

^b Days unemployed conditional on experiencing any unemployment.

^c Percentage who experienced any unemployment during the year.

^d Total days in the work year is computed as (annual earning/daily wage) + days lost due to having no work, sickness, and other causes. Individuals whose total days exceeded 365 were deleted from the sample.

^e The unemployment rate is given by the mean number of days (or weeks) unemployed divided by the total number of days in the workyear. For 1910 the number of weeks worked each year is taken to be 52. The number of days worked per week does not affect the estimate of the unemployment rate.

Notes: In all cases the sample consists of males, less than 65 years old, whose occupations and industries suggested they were employed by firms (that is, they were not self-employed). The variable used for California, Kansas, and Maine is the number of days the worker lost time due to “no work,” as opposed to sickness or other causes. In Michigan, where days lost was not broken down by cause, the distribution is given only if the cause for the spells was an involuntary one. In the case of two or more causes, indicating several spells with different causes, the time was allocated to the voluntary reason (e.g., illness, vacation). Thus the percentage experiencing no unemployment spells is a lower bound to the true value. The data for Michigan refer to workers in firms that manufactured furniture.

Sources: 1910 Public Use Microdata Sample; Carter, et al. (1990) for state BLS data. The entries for the distribution of unemployment may not sum to 100 percent due to rounding error.

Table 9: Black Male Wages as a Percentage of White Male Wages by Labor Market Cohort

<i>Median Year of Initial Labor Market Work</i>	<i>Census Year</i>				
	<i>1940</i>	<i>1950</i>	<i>1960</i>	<i>1970</i>	<i>1980</i>
1978					84.2
1973				75.1	76.6
1968			60.2	70.1	73.5
1963		61.8	59.1	66.2	71.2
1958	46.7	60.0	59.4	62.8	67.8
1953	47.5	58.3	58.4	62.7	66.9
1948	44.4	56.6	57.6	60.6	66.5
1943	44.4	54.1	56.2	60.0	68.5
1938	42.3	53.2	53.8	60.3	
1933	41.7	50.3	55.9		
1928	40.2	46.9			
1923	39.8				
1918					
1913					
1908					
1903					
All	43.4	55.2	57.5	64.4	72.6

Notes: “Median year of initial labor market work” is derived from information on education and age and is approximate. “All” means across all of the labor market cohorts.

Source: Smith and Welch (1989), table 8.

References

Note: Several U.S. government publications are referenced in the text, notes, figures, and tables in abbreviated form. They are, with the “author” in parentheses, *The Economic Report of the President* (U.S. Council of Economic Advisers) *National Income and Product Accounts* (U.S. Department of the Commerce, Bureau of Economic Analysis), *Historical Statistics* (1975; U.S. Department of Commerce, Bureau of the Census), and *Employment and Earnings* (Department of Labor, Bureau of Labor Statistics). The full citations are given below, in the usual manner, by “author.”

- Allen, Steven G. (1981) “An Empirical Model of Work Attendance,” *Review of Economics and Statistics* 63 (January): 77-87.
- Allen, Steven G. (1987) “Relative Wage Variability in the United States, 1860-1983,” *Review of Economic and Statistics* 69 (November): 617-26.
- Allen, Steven G. (1995) “Updated Notes on the Interindustry Wage Structure, 1890-1990,” *Industrial and Labor Relations Review* 48 (January): 305-21.
- Benevise, M. Ada. (1936) *Wages, Hours, and Employment in the United States, 1914-1936*. New York: National Industrial Conference Board.
- Blau, Francine D., and Lawrence M. Kahn. (1994) “Rising Wage Inequality and the U.S. Gender Gap,” *American Economic Review* 84 (May): 23-28.
- Bound, John, and Richard Freeman. (1992) “What Went Wrong? The Erosion of Relative Earnings and Employment among Young Black Men in the 1980s,” *Quarterly Journal of Economics* 107 (February): 201-32.
- Card, David, and Alan Krueger. (1992) “School Quality and Black-White Relative Earnings: A Direct Assessment,” *Quarterly Journal of Economics* 107 (February): 151-200.
- Carter, Susan B. (1988) “The Changing Importance of Lifetime Jobs in the U.S. Economy, 1892-1978,” *Industrial Relations* 27 (Fall): 287-300.
- Carter, Susan B., and Elizabeth Savoca. (1990) “Labor Mobility and Lengthy Jobs in Nineteenth-Century America,” *Journal of Economic History* 50 (March): 1-16.
- Carter, Susan B., and Richard Sutch. (1991) “Sticky Wages, Short Weeks, and “Fairness”: The Response of Connecticut Manufacturing Firms to the Depression of 1893-94.” Historical Labor Statistics Project, University of California at Berkeley, Working Paper No. 2.
- Carter, Susan B., Richard Sutch, and Roger Ransom. (1990) “Codebook and User’s Manual: Survey

of 3,493 Wage Earners in California in 1892, Reported in the Fifth Biennial Report of the California Bureau of Labor Statistics for 1893.”

“Codebook and User’s Manual: A Survey of 1,165 Workers in Kansas, 1884-1887, Reported in the First, Second, and Third Annual Reports of the Kansas Bureau of Labor and Industrial Statistics.”

“Codebook and User’s Manual: A Survey of 1,084 Workers in Maine, 1890, Reported in the Fifth Annual Report of the Maine Bureau of Industrial and Labor Statistics.”

“Codebook and User’s Manual: A Survey of 5,419 Workers in Michigan, 1889, Reported in the Seventh Annual Report of the Michigan Bureau of Labor and Industrial Statistics.” Berkeley: Institute of Business and Economic Research.

Coombs, Whitney. (1926) *The Wages of Unskilled Labor in Manufacturing Industries in the United States, 1890-1924*. New York: Columbia University Press.

Costa, Dora. (1993) *Health, Income, and Retirement: Evidence from Nineteenth Century America*. Ph.D. dissertation. Department of Economics. University of Chicago.

Costa, Dora. (1998) *The Evolution of Retirement: An American Economic History, 1880-1990*. Chicago, IL: University of Chicago Press.

Cullen, Donald. (1956) “The Interindustry Wage Structure: 1899-1950,” *American Economic Review* 46 (June): 353-69.

Darby, Michael. (1976) “Three-and-a-half Million U.S. Employees Have Been Misled: Or, an Explanation of Unemployment, 1934-1941,” *Journal of Political Economy* 84 (February): 1-26.

Denison, Edward F. (1985) *Trends in American Economic Growth, 1929-1982*. Washington, D.C.: The Brookings Institution.

Doeringer, Peter B., and Michael J. Piore. (1971) *Internal Labor Markets and Manpower Analysis*. Lexington, MA: D.C. Heath.

Donohue, John H. III, and James P. Heckman. (1991) “Continuous Versus Episodic Change: The Impact of Civil Rights Policy on the Economic Status of Blacks,” *Journal of Economic Literature* 29 (December): 1603-43.

Douglas, Paul H. (1930) *Real Wages in the United States: 1890-1926*. Boston: Houghton Mifflin.

Dulles, Foster Rhea and Melvyn Dubofsky. (1993) *Labor in America: A History*. Fifth edition. Arlington Heights, IL: Harlan Davidson Inc.

Durand, John. (1948) *The Labor Force in the United States, 1890-1960*. New York: Social Science Research Council.

- Edwards, Richard. (1979) *Contested Terrain: The Transformation of the Workplace in the Twentieth Century*. New York: Basic Books.
- Ehrenberg, Ronald G., and Robert S. Smith. (1991) *Modern Labor Economics: Theory and Public Policy*. New York: Harper Collins.
- Fishback, Price V., and Shawn Everett Kantor. (1995) "Did Workers Pay for the Passage of Workers' Compensation Laws?" *Quarterly Journal of Economics* 110 (August): 713-42.
- Freeman, Richard. (1980) "The Evolution of the American Labor Market, 1948-80." In Martin Feldstein, ed., *The American Economy in Transition*. Princeton, NJ: Princeton University Press for the NBER: 349-96.
- Freeman, Richard. (1998) "Spurts in Union Growth: Defining Moments and Social Processes." In Michael Bordo, Claudia Goldin, and Eugene White, eds., *The Defining Moment: The Great Depression and the American Economy in the Twentieth Century*. Chicago, IL: University of Chicago Press: 265-295.
- Freeman, Richard, and Joel Rogers. (1992) "Who Speaks for Us? Employee Representation in a Non-Union Labor Market." Unpublished working paper.
- Friedman, Gerald. (1988) "Strike Success and Union Ideology: The United States and France, 1880-1914," *Journal of Economic History* 48 (March): 1-26.
- Friedman, Gerald. (1993) "New Estimates of Union Membership: The United States, 1880-1914." Unpublished manuscript.
- Goldin, Claudia. (1986) "The Female Labor Force and American Economic Growth: 1890 to 1980." In Stanley Engerman and Robert Gallman, eds., *Long-Term Factors in American Economic Growth*, Conference on Income and Wealth, vol. 51. Chicago, IL: University of Chicago Press
- Goldin, Claudia. (1988) "Maximum Hours Legislation and Female Employment in the 1920's: A Reassessment," *Journal of Political Economy* 96 (February): 189-205.
- Goldin, Claudia. (1990) *Understanding the Gender Gap: An Economic History of American Women*. New York: Oxford University Press.
- Goldin, Claudia. (1991) "The Role of World War II in the Rise of Women's Employment," *American Economic Review* 81 (September): 741-56.
- Goldin, Claudia. (1994) "The Political Economy of Immigration Restriction in the United States: 1890 to 1921." In Claudia Goldin and Gary Libecap, *The Regulated Economy: A Historical Approach to Political Economy*. Chicago, IL: University of Chicago Press.

- Goldin, Claudia. (1995) "The C-Shaped Female Labor Force Function in Economic Development and Economic History." In T. Paul Schultz, ed., *Investment in Women's Human Capital and Economic Development*. Chicago, IL: University of Chicago Press.
- Goldin, Claudia. (1997) "Career and Family: College Women Look to the Past." In F. Blau and R. Ehrenberg, eds., *Gender and Family Issues in the Workplace*. New York: Russell Sage Press.
- Goldin, Claudia. (1998) "America's Graduation from High School: The Evolution and Spread of Secondary Schooling in the Twentieth Century," *Journal of Economic History* 58 (June): forthcoming.
- Goldin, Claudia, and Stanley Engerman. (1993) "Seasonality in Nineteenth Century American Labor Markets." In Donald Schaefer and Thomas Weiss, eds., *Economic Development in Historical Perspective*. Stanford, CA: Stanford University Press.
- Goldin, Claudia, and Lawrence F. Katz. (1995) "The Decline of 'Non-Competing Groups': Changes in the Premium to Education, 1890 to 1940." National Bureau of Economic Research Working Paper, No. 5202 (August).
- Goldin, Claudia, and Robert A. Margo. (1991) "Downtime: Voluntary and Involuntary Unemployment of the Past and Present." Paper presented to the Kansas Conference on Historical Labor Statistics, July.
- Goldin, Claudia, and Robert A. Margo. (1992) "The Great Compression: The Wage Structure in the United States at Mid-Century," *Quarterly Journal of Economics* 107 (February): 1-34.
- Goldin, Claudia, and Donald Parsons. (1989) "Parental Altruism and Self-Interest: Child Labor among Late-Nineteenth Century American Families," *Economic Inquiry* 27 (October): 637-659.
- Goldsmith, Selma F. (1967) "Changes in the Size Distribution of Income." In E. C. Budd, ed., *Inequality and Poverty*. New York: Harper and Row.
- Habakkuk, H.J. (1962) *American and British Technology in the Nineteenth Century: The Search for Labour-Saving Inventions*. Cambridge, Eng.: Cambridge University Press.
- Heckman, James J., and Brook S. Paynor. (1991) "Determining the Impact of Federal Antidiscrimination Policy on the Economic Status of Blacks: A Study of South Carolina," *American Economic Review* 79 (March): 138-77.
- Jacoby, Sanford M. (1984) "The Development of Internal Labor Markets in American Manufacturing Firms." In Paul Osterman, ed., *Internal Labor Markets*. Cambridge, MA: M.I.T. Press.
- Jacoby, Sanford M. (1985) *Employing Bureaucracy: Managers, Unions, and the Transformation of Work in American Industry, 1900-1945*. New York: Columbia University Press.

- Jacoby, Sanford M., and Sunil Sharma. (1992) "Employment Duration and Industrial Labor Mobility in the United States, 1880-1980," *Journal of Economic History* 52 (March): 161-79.
- James, John A., and Jonathan Skinner. (1985) "The Resolution of the Labor-Scarcity Paradox," *Journal of Economic History* 45 (September): 513-40.
- Jones, Ethel. (1963) "New Estimates of Hours of Work per Week and Hourly Earnings, 1900-1957," *Review of Economics and Statistics* 45 (November): 374-85.
- Juhn, Chinhui, Kevin M. Murphy, and Robert H. Topel. (1991) "Why Has the Natural Rate of Unemployment Increased over Time?" *Brookings Papers on Economic Activity* 0 (2) 1991: 75-126.
- Katz, Lawrence F. (1986) "Layoffs, Recall and the Duration of Unemployment." NBER Working Paper No. 1825.
- Katz, Lawrence F., and Bruce D. Meyer. (1990) "Unemployment Insurance, Recall Expectations and Unemployment Outcomes." *Quarterly Journal of Economics* 105 (November): 973-1002.
- Katz, Lawrence F., and Kevin M. Murphy. (1992) "Changes in Relative Wages, 1963-87: Supply and Demand Factors," *Quarterly Journal of Economics* 107 (February): 35-78.
- Keat, Paul. (1960) "Long-Run Changes in Occupational Wage Structure, 1900-1956," *Journal of Political Economy* 68 (December): 584-600.
- Kerr, Clark. (1954) "The Balkanization of Labor Markets." In E. Wight Bakke, et al., *Labor Mobility and Economic Opportunity*. New York: Technology Press of M.I.T. and Wiley.
- Kesselman, Jonathan R., and N. E. Savin. (1978) "Three-and-a-Half Million Workers Never Were Lost," *Economic Inquiry* 16 (April): 205-25.
- Keyssar, Alexander. (1986) *Out of Work: The First Century of Unemployment in Massachusetts*. New York: Cambridge University Press.
- Krueger, Alan B., and Lawrence H. Summers. (1987) "Reflections on the Inter-Industry Wage Structure." In Kevin Lang and Jonathan Leonard, eds., *Unemployment and the Structure of Labor Markets*. Oxford: Basil Blackwell Publishers. 17-47.
- Kuznets, Simon. (1933) *Seasonal Variations in Industry and Trade*. New York: National Bureau of Economic Research.
- Kuznets, Simon. (1953) *Shares of Upper Income Groups in Income and Savings*. New York: National Bureau of Economic Research.

- Lebergott, Stanley. (1964) *Manpower in Economic Growth: The American Record since 1800*. New York: McGraw-Hill Inc.
- Lebergott, Stanley. (1992) "Historical Unemployment Series: A Comment," *Reviews in Economic History* 14: 377-86.
- Leonard, Jonathan. (1986) "The Effectiveness of Equal Employment Opportunity Law and Affirmative Action Regulation." In Ronald Ehrenberg, ed., *Research in Labor Economics* 8: 319-50.
- Leonard, Jonathan. (1989) "Women and Affirmative Action," *Journal of Economic Perspectives* 3 (Winter): 61-75.
- Leonard, Jonathan. (1990) "The Impact of Affirmative Regulation and Equal Employment Law on Black Employment," *Journal of Economic Perspectives* 4 (Fall): 47-63.
- Lewis, H. Gregg. (1963) *Unionism and Relative Wages in the United States*. Chicago, IL: University of Chicago Press.
- Lewis, H. Gregg. (1986) *Union Relative Wage Effects: A Survey*. Chicago, IL: University of Chicago Press.
- Long, Clarence. (1958) *The Labor Force Under Changing Income and Employment*. Princeton, NJ: Princeton University Press.
- Margo, Robert A. (1988) "Interwar Unemployment in the U.S.: Evidence from the 1940 Census Sample." In Barry Eichengreen and Timothy Hatton, eds., *Interwar Unemployment in Historical Perspective*. The Netherlands: Kluwer Academic Publishers: 325-52.
- Margo, Robert A. (1990a) "The Incidence and Duration of Employment: Some Long-Term Comparisons" *Economics Letters* 32 (March): 217-20.
- Margo, Robert A. (1990b) *Race and Schooling in the South, 1880-1950: An Economic History*. Chicago, IL: University of Chicago Press.
- Margo, Robert A. (1993a) "The Labor Force Participation of Older Americans in 1900: Further Results," *Explorations in Economic History* 30 (October): 409-23.
- Margo, Robert A. (1993b) "Employment and Unemployment in the 1930s," *Journal of Economic Perspectives* 7 (Spring): 41-59.
- Margo, Robert A. (1995) "Explaining Black-White Wage Convergence, 1940-1950: The Role of the Great Compression," *Industrial and Labor Relations Review* 48 (April): 470-81.

- Marshall, Ray, and Marc Tucker. (1992) *Thinking for a Living: Education and the Wealth of Nations*. New York: Basic Books.
- Miller, Herman P. (1955) *Income of the American People*, A Volume in the Census Monograph Series. New York: John Wiley and Sons.
- Miller, Herman P. (1958) "Changes in the Industrial Distribution of Wages in the United States, 1939-1949." In *An Appraisal of the 1950 Census Income Data*, Studies in Income and Wealth, Vol. 23. Princeton, NJ: Princeton University Press.
- Miller, Herman P. (1966) *Income Distribution in the United States*. Washington, D.C.: G.P.O.
- Moen, Jon Roger. (1987a) *Essays on the Labor Force and Labor Force Participation Rates: The United States from 1860 to 1950*. Ph.D. dissertation. Department of Economics. University of Chicago.
- Moen, Jon Roger. (1987b) "The Labor of Older Men: A Comment," *Journal of Economic History* 47 (September): 761-67.
- Nelson, Daniel. (1969) *Unemployment Insurance: The American Experience, 1915-1935*. Madison, WI: University of Wisconsin Press.
- Nelson, Daniel. (1975) *Managers and Workers: Origins of the New Factory System in the United States, 1880-1920*. Madison, WI: University of Wisconsin Press.
- Ober, Harry. (1948) "Occupational Wage Differentials, 1907-1947," *Monthly Labor Review* (August): 127-34.
- O'Neill, June. (1990) "The Role of Human Capital in Earnings Differences between Black and White Men," *Journal of Economic Perspectives* 4 (Fall): 25-45.
- O'Neill, June, and Solomon Polachek. (1993) "Why the Gender Gap in Wages Narrowed in the 1980s," *Journal of Labor Economics* 11 (January): 205-28.
- Owen, John. (1976) "Workweeks and Leisure: An Analysis of Trends, 1948-1975," *Monthly Labor Review* 99 (August): 3-8.
- Owen, John. (1988) "Work-Time Reduction in the United States and Europe," *Monthly Labor Review* 111 (December): 41-45.
- Raff, Daniel. (1988) "Wage Determination Theory and the Five-Dollar Day at Ford," *Journal of Economic History* 48 (June): 387-400.

- Ransom, Roger, and Richard Sutch. (1986) "The Labor of Older Americans: Retirement of Men On and Off the Job, 1870-1937," *Journal of Economic History* 46 (March): 1-30.
- Romer, Christina. (1986a) "New Estimates of Prewar Gross National Product and Unemployment," *Journal of Economic History* 46 (June): 341-52.
- Romer, Christina. (1986b) "Spurious Volatility in Historical Unemployment Data," *Journal of Political Economy* 94 (February): 1-37.
- Sinclair, Upton. (1906) *The Jungle*. New York: Doubleday.
- Slichter, Sumner H. (1950) "Notes on the Structure of Wages," *Review of Economics and Statistics* 32 (February): 80-91.
- Smith, James P., and Michael P. Ward. (1984) *Women's Wages and Work in the Twentieth Century*. Santa Monica, CA: The Rand Corporation.
- Smith, James P., and Finis R. Welch. (1989) "Black Economic Progress after Myrdal," *Journal of Economic Literature* 27 (June): 519-64.
- Sundstrom, William. (1990) "Was there a Golden Age of Flexible Wages? Evidence from Ohio Manufacturing, 1892-1910," *Journal of Economic History* 50 (June): 309-20.
- Troy, Leo, and Neil Sheflin. (1985) *U.S. Union Sourcebook*. West Orange, N.J.: IRDIS (Industrial Relations Data and Information Services).
- Ulman, Lloyd. (1966) *The Rise of the National Trade Unions*. Cambridge, MA: Harvard University Press.
- U.S. Commissioner of Labor. (1905) *Nineteenth Annual Report, 1904. Wages and Hours of Labor*. Washington, D.C.: G.P.O.
- U.S. Council of Economic Advisers. (1992) *The Economic Report of the President*. Washington, D.C.: G.P.O. [cited as *The Economic Report of the President*].
- U.S. Department of Commerce, Bureau of Economic Analysis. (1993) *National Income and Product Accounts of the United States*. Vol. 1, 1929-58. Washington, D.C.: G.P.O. [cited in text as *National Income and Product Accounts*]
- U.S. Department of Commerce, Bureau of Economic Analysis. (1992) *National Income and Product Accounts of the United States*. Vol. 2, 1959-88. Washington, D.C.: G.P.O. [cited as *National Income and Product Accounts*]

- U.S. Department of Commerce, Bureau of the Census. (1914) *Thirteenth Census of the United States, 1910*. Vol. IV. *Population. Occupation Statistics*. Washington, D.C.: G.P.O.
- U.S. Department of Commerce, Bureau of the Census. (1933) *Fifteenth Census of the United States: 1930. Population*. Vol. V. Washington, D.C.: G.P.O.
- U.S. Department of Commerce, Bureau of the Census. (1943) *Sixteenth Census of the United States: 1940. Population*. Vol. II: Characteristics of the Population. Washington, D.C.: G.P.O.
- U.S. Department of Commerce, Bureau of the Census. (1975) *Historical Statistics of the United States: Colonial Times to 1970*. Washington, D.C.: G.P.O. [cited as *Historical Statistics (1975)*]
- U.S. Department of Commerce, Bureau of the Census. (1988) *1986 Annual Survey of Manufactures*. Washington, D.C.: G.P.O.
- U.S. Department of Commerce and Labor, Bureau of the Census. (1904) *Special Reports: Occupations at the Twelfth Census*. Washington, D.C.: G.P.O.
- U.S. Department of Education. (1993) *120 Years of American Education: A Statistical Portrait*. Washington, D.C.: G.P.O.
- U.S. Department of Labor, Bureau of Labor Statistics. (various years) *Employment and Earnings*. Washington, D.C.: G.P.O. [cited as *Employment and Earnings*]
- U.S. Department of Labor, Bureau of Labor Statistics. (1989) *The Handbook of Labor Statistics*. Bulletin 2340. Washington, D.C.: G.P.O.
- U.S. Department of the Interior, Census Office. (1883) *Report on the Statistics of Wages in the Manufacturing Industries* by Joseph D. Weeks. *1880 Census*. Vol. 20. Washington, D.C.: G.P.O.
- Weir, David R. (1992) "A Century of U.S. Unemployment, 1890-1990: Revised Estimates and Evidence for Stabilization," *Research in Economic History* 14: 301-346.
- Whaples, Robert. (1990) *The Shortening of the American Work Week: An Economic and Historical Analysis of its Context, Causes, and Consequences*. Ph.D. dissertation. Department of Economics. University of Pennsylvania.
- Williamson, Jeffrey, and Peter Lindert. (1980) *American Inequality: A Macroeconomic History*. New York: Academic Press.
- Wright, Gavin. (1990) "The Origins of American Industrial Success, 1879-1940," *American Economic Review* 80 (September): 651-68.

BIBLIOGRAPHIC NOTES

The subject of labor in U.S. history is broad and varied and there is no single source that provides a detailed overview of the long-term changes that span the twentieth century. There are, however, many fine volumes and articles concerned with specialized topics in labor history, such as unions, hours of work, retirement, the female work force, inequality, education and training, and unemployment. There are also countless books on the labor forces of firms and the memberships of unions, but they have not been used extensively here. Because history is about change, much of the history of the labor force is concerned with groups that have had altered labor force participation rates or changed relative wages over time. Thus the labor force participation of women, the old, and the young, and disparities in earnings by race, gender, and ethnicity have received the most attention.

The basic data on the labor force, wages, and hours can be found in U.S. Department of Commerce, Bureau of the Census, *Historical Statistics of the United States: Colonial Times to 1970* (Washington, D.C., 1975), which is currently under revision (scheduled to appear as *Historical Statistics of the United States 2000*). In the absence of the updated version, researchers can consult volumes such as U.S. Department of Labor, Bureau of Labor Statistics, *The Handbook of Labor Statistics*, Bulletin 2340 (Washington, D.C., 1989), U.S. Department of Labor, Bureau of Labor Statistics, *Employment and Earnings* (Washington, D.C., various years), and the various Current Population Reports that summarize the Current Population Survey data on income and employment. For educational and schooling statistics, U.S. Department of Education, *120 Years of American Education: A Statistical Portrait* (Washington, D.C., 1993) provides a useful updating of the data in *Historical Statistics*.

It should be kept in mind that most of the post-1940 data on aspects of labor come from conventional U.S. government sources (such as those issued by the Bureau of Labor Statistics and the Bureau of the Census), but that the pre-1940 data were constructed by various researchers. The reason concerns the fundamental shift in the late 1930s to standard concepts of the labor force and unemployment and the expansion of the statistical agencies of the U.S. government. Many of the pre-1940 series in *Historical Statistics* are summaries of important data sources that can provide more detail, although one must exercise caution in using the original sources since more recent research has often located errors and substituted better data. Among the more important of the original sources on wages and hours are M. Ada Beney, *Wages, Hours, and Employment in the United States, 1914-1936* (New York, 1936), Paul H. Douglas, *Real Wages in the United States: 1890-1926* (Boston, 1930), and Whitney Coombs, *The Wages of Unskilled Labor in Manufacturing Industries in the United States, 1890-1924* (New York, 1926).

A classic on the general subject, which also covers the entire history of labor in the nineteenth century and provides many of the data series upon which historians and economists still rely, is Stanley Lebergott, *Manpower in Economic Growth: The American Record since 1800* (New York, 1964). Richard Edwards, *Contested Terrain: The Transformation of the Workplace in the Twentieth Century* (New York, 1979) is a worthy interpretive essay. John Durand, *The Labor Force in the United States, 1890-1960* (New York, 1948) and Clarence Long, *The Labor Force Under Changing Income and Employment* (Princeton, 1958) have been standard subjects on labor supply at about mid-century. Durand's volume deals with the many data issues that arose when the labor force and unemployment constructs were instituted. Both Durand and Long focus extensively on the female labor force, for even

at mid-century it was a locus of change. Richard Freeman, "The Evolution of the American Labor Market, 1948-80," in Martin Feldstein, ed., *The American Economy in Transition* (Princeton, 1980), 349-96, provides a more recent treatment.

The twentieth century decline in weekly hours of work is described and analyzed in Robert Whaples, *The Shortening of the American Work Week: An Economic and Historical Analysis of its Context, Causes, and Consequences*, Ph.D. dissertation, Department of Economics, University of Pennsylvania (1990). The subjects of old age retirement, health, and leisure are comprehensively treated in Dora Costa, *The Evolution of Retirement: An American Economic History, 1880-1990* (Chicago, 1998). Roger Ransom and Richard Sutch, "The Labor of Older Americans: Retirement of Men On and Off the Job, 1870-1937," *Journal of Economic History* 46 (1986), 1-30, presents a somewhat different view of retirement and emphasizes that workers altered their occupations as they aged and moved into less strenuous pursuits.

The twentieth century has witnessed rising retirement, greater education of the young, far less youth employment, and considerably lower hours of work for all. Women's increased participation in the labor force provides the only major increase in labor supply. More importantly, the increase in the female labor force fundamentally altered social relations. The subjects of female participation and the gender gap in earnings, as well as an analysis of why change occurred, are presented in Claudia Goldin, *Understanding the Gender Gap: An Economic History of American Women* (New York, 1990). James P. Smith, and Michael P. Ward, *Women's Wages and Work in the Twentieth Century* (Santa Monica, CA, 1984) deals with many of the same subjects but is written more for economists. The impact that increased female labor force participation had on the economy is analyzed in Claudia Goldin, "The Female Labor Force and

American Economic Growth: 1890 to 1980,” in Stanley Engerman and Robert Gallman, eds., *Long-Term Factors in American Economic Growth*, Conference on Income and Wealth, vol. 51 (Chicago, 1986).

Union strength first rose and then fell in twentieth century America. For a broad overview see the updated classic, Foster Rhea Dulles and Melvyn Dubofsky, *Labor in America: A History*, Fifth edition (Arlington Heights, IL, 1993). Lloyd Ulman, *The Rise of the National Trade Unions*. (Cambridge, MA, 1966) still provides the best statement of why national trade unions are inevitable when goods markets become national. The impact unions have had on worker wages is analyzed in H. Gregg Lewis, *Unionism and Relative Wages in the United States* (Chicago, 1963) and then thoroughly reanalyzed in his later work *Union Relative Wage Effects: A Survey* (Chicago, 1986).

The functioning of the labor market in general is an unwieldy subject, but has been addressed in several volumes mainly concerned with the evolution of internal labor markets and conscious personnel policy. A classic on the first subject is Peter B. Doeringer, and Michael J. Piore, *Internal Labor Markets and Manpower Analysis* (Lexington, MA, 1971). The latter subject is given a superb historical treatment in Daniel Nelson, *Managers and Workers: Origins of the New Factory System in the United States, 1880-1920* (Madison, WI, 1975). On the response of managers and personnel policy to potential union organizing, see Sanford M. Jacoby, *Employing Bureaucracy: Managers, Unions, and the Transformation of Work in American Industry, 1900-1945* (New York, 1985). Whether or not the labor market was once a “spot” market but is now replete with implicit (and explicit) contracts is the subject of a wide literature. Part of the subject concerns the possibility that certain industries pay higher than market wages to their workers. One of the earliest articles on the topic of interindustry wage differentials is Donald Cullen, “The Interindustry Wage Structure: 1899-1950,” *American Economic Review* 46

(1956), 353-69, which receives an updated treatment in Alan B. Krueger, and Lawrence H. Summers, "Reflections on the Inter-Industry Wage Structure," in Kevin Lang and Jonathan Leonard, eds., *Unemployment and the Structure of Labor Markets* (Oxford, Eng., 1987), 17-47. Upton Sinclair, *The Jungle* (New York, 1906) contains many insights about labor markets in general at the dawn of the twentieth century, but the wheat of this journalistic novel must be separated from its abundant chaff.

The evolution of the concept of unemployment in the late nineteenth century is insightfully presented in Alexander Keyssar, *Out of Work: The First Century of Unemployment in Massachusetts* (New York, 1986), which also discusses unemployment rates in the early twentieth century. The unemployment series assembled by Stanley Lebergott for the 1890 to 1929 period, and enshrined in *Historical Statistics*, is astutely questioned by Christina Romer, "Spurious Volatility in Historical Unemployment Data," *Journal of Political Economy* 94 (1986), 1-37, who provides an alternative series. David R. Weir, "A Century of U.S. Unemployment, 1890-1990: Revised Estimates and Evidence for Stabilization," *Research in Economic History* 14 (1992), 301-346, defends the original method and offers yet another series.

The starting point for the notion that income inequality in the United States declined precipitously sometime during the first half of the twentieth century is Simon Kuznets, *Shares of Upper Income Groups in Income and Savings* (New York, 1953). The subject is explored further in Claudia Goldin, and Robert A. Margo, "The Great Compression: The Wage Structure in the United States at Mid-Century," *Quarterly Journal of Economics* 107 (1992), 1-34, which locates the compression of the wage structure in the 1940s. The general subject of inequality in U.S. history is given a broad treatment in Jeffrey Williamson, and Peter Lindert, *American Inequality: A Macroeconomic History* (New York, 1980), which argues that inequality in income, wealth, and wages first rose before it declined in the twentieth century. The

subject of inequality is afforded more attention during periods of widening incomes and thus the literature has burgeoned of late. Among the many papers written on the topic in the past twenty years is Lawrence F. Katz, and Kevin M. Murphy, "Changes in Relative Wages, 1963-87: Supply and Demand Factors," *Quarterly Journal of Economics* 107 (1992), 35-78, which clearly sets forth the late twentieth century changes and some of its causes.

A related subject concerns the decline in black and white income differences during the past half century. James P. Smith, and Finis R. Welch, "Black Economic Progress after Myrdal," *Journal of Economic Literature* 27 (1989), 519-64, provides the basic data and defends the notion that educational progress was responsible for a large portion of the decrease in racial inequality of incomes from 1940 to 1980. Robert A. Margo, *Race and Schooling in the South, 1880-1950: An Economic History* (Chicago, 1990) details the segregated educational system of the South that originally gave rise to large differences in schooling. John H. Donohue III, and James P. Heckman, "Continuous Versus Episodic Change: The Impact of Civil Rights Policy on the Economic Status of Blacks," *Journal of Economic Literature* 29 (1991), 1603-43, questions whether changes in educational quantity and quality could have played a major role in the narrowing of the differences between black and white incomes. John Bound, and Richard Freeman, "What Went Wrong? The Erosion of Relative Earnings and Employment among Young Black Men in the 1980s," *Quarterly Journal of Economics* 107 (1992), 201-32, details the widening of the gap between black and white incomes in the most recent decade.

Increased educational attainment in the twentieth century affected the labor force in several ways. It decreased the labor force participation rate of youth, it allowed women to enter the white-collar labor force and thus work when married, and it, most importantly, gave the labor force greater skills. For much

of the twentieth century, the most important educational change was the expansion of secondary schooling. The rise of the American high school and of secondary education is discussed in Claudia Goldin, "America's Graduation from High School: The Evolution and Spread of Secondary Schooling in the Twentieth Century," *Journal of Economic History* 58 (1998). The literature on other aspects of government and the labor market, such as social security, unemployment insurance, workers' compensation, and the minimum wage, is left for the chapter on government.